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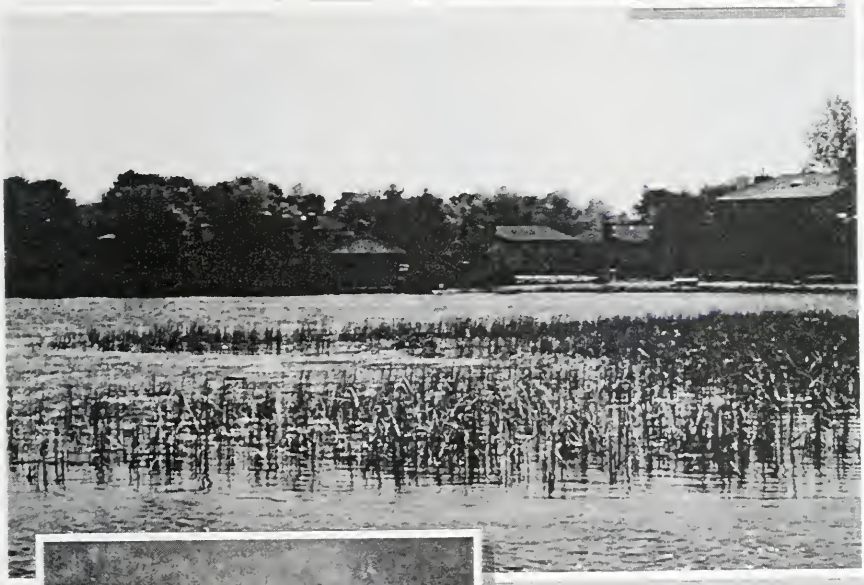
Lake Couchiching
Environmental Quality
1997



Volume II:
Appendices

WSA
Water Systems Analysts

Ministry of the Environment
Ontario

ISBN 0-7778-8497-6

(VOL. II) 0-7778-8499-2

LAKE COUCHICHING ENVIRONMENTAL QUALITY - 1997

VOLUME II - APPENDICES

March 1999

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PIBS 3736e01

Lake Couchiching Environmental Quality - 1997

Volume II - Appendices

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March 1999

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Appendix A - Wastewater Discharges to Lake Couchiching

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Table A.1 Wastewater discharges to Lake Couchiching

Facility	Discharge			Effluent Criteria/Objective, mg/L or organisms/Dl					
	Treatment	Type	Discharge Point	BOD	S.S.	T.P.	T. NH[3]	Chlorine	*E. coli*
Casino Rama STP	mechanical tertiary, with UV disinfection	continuous	400 m offshore	<10	<10	<0.15	<3	ND	<100
Casino Rama stormwater	wetland	intermittent	Marina watercourse (East Branch)						
Casino Rama WTP	packaged, conventional	backwash			<15				
YMCA Geneva Park STP	three-cell lagoon	seasonal: spring & fall	into bay	15	20	0.5			
Camp Wahonowin STP	single facultative lagoon + alum	seasonal: spring or fall	into wetland & then into lake via two culverts	25	25	1.0			
Fern Resort Ltd. STP	single-cell lagoon + alum	seasonal: spring & fall	into Sucker Creek						
Ontario Educational Leadership STP	extended-air STP	seasonal							

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Appendix B - Preliminary Reconnaissance Survey Results for Candidate Sampling Locations.

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Table B.1 Preliminary Reconnaissance Survey Results for Candidate Sampling Locations.

Station			Depth, metres	Ponar Fullness	Sediment Characteristics	Debris	Flora		Fauna							
Recon. No.	Final No.	Location/Description					*Chara*	Other	Amphipod	Isopod	Chironomid	Burr. Mayfly	Snail	Clam	Mussel	Other
1		off Orillia marina	3.0	3/5	grey, very silty, organic	calcareous, wood chips, snail & fingernail clam shells	✓ (+Ca)			✓	✓ (red)			fingernail, *Carbicula*	*Dreissena*	
2		middle of Pumpkin Bay	1.8	5/5	grey, sandy, silty, jelly-like ooze, H_2S odour	calcareous, snail & fingernail clam shells	✓	tubers		✓	✓ (red)				*Dreissena* (many on *Chara*)	
3		north of Couchuchung Beach Park	3.0	5/5	grey, sandy, silty, jelly-like ooze, H_2S odour	calcareous, *Corbicula* shell	✓ (abundant & finer)		✓		✓ (red & green)				*Dreissena*	
4		south of Taflon	3.4	5/5	grey, sandy, silty ooze, slight H_2S odour	calcareous (abundant), unionid shell	✓ (abundant)	tubers			✓			fingernail	*Dreissena*	
5		in bay south of Wilson Pt., off boat channel	1.8	5/5	grey, silty, gritty ooze (more sand)	calcareous, unionid shells	✓	tubers	✓		✓	✓			*Dreissena* (larger)	
6		off Wilson Pt., near red buoy	2.7-3.0	5/5	more brown-grey, silty ooze, slight H_2S odour	calcareous; *Corbicula* & fingernail clam shells	✓ (abundant)	tubers			✓ (red)	✓ (large)	*Helisoma, Physa*	fingernail	*Dreissena* (smaller, on *Chara*)	crayfish (*Orconectes*) & Johnny Darter
7		Woods Bay, off radio antenna & Happyland	2.4	5/5	grey, silty ooze	calcareous, snail & fingernail clam shells	✓ (very abundant)	tubers - *Potamogeton?*			✓ (red)	✓			*Dreissena* (small, on *Chara*)	leech
8		off Amigo Beach	1.5	5/5	grey, silty ooze, H_2S odour		✓				✓ (red)			fingernail (*Sphaerium*)	*Dreissena* (small, on *Chara*)	
9		Cumberland Beach, off brown cedar cottage with fence	1.8	5/5 ?	darker grey, sandy silt	calcareous, shells	✓				✓		*Helisoma*	fingernail (*Sphaerium*)	*Dreissena* (large, on *Chara*)	dragonfly, large worms & darter
10		south of Scarlet Park	3.4	3/5	grey-black, sandy silt, some H_2S odour	calcareous	✓ (abundant)				✓	✓ (large & small)	*Lymnaea*		*Dreissena* (large & small)	dragonfly & sponge
11		north of Scarlet Park	1.8	5/5	grey, sandy silt	calcareous	✓	*Potamogeton*			✓ (red & green)	✓ (large)		fingernail (*Pisidium*)	*Dreissena*	dragonfly, large worms & leech
12		Washago, north of green buoy No. 263	2.7	5/5	grey, sandy silt	calcareous (abundant)	✓ (abundant)				✓	✓ (abundant)		fingernail (*Sphaerium*)	*Dreissena*	
13		Floral Park	2.1	5/5	grey, sandy silt, large rock outcrops	calcareous	✓ (abundant)				✓ (red)	✓		fingernail	*Dreissena* (on *Chara*)	
14		bay at YMCA Camp	3.0	4/5	grey, more sandy silt	calcareous, abundant bark, unionid shell	✓	tubers			✓ (red)	✓ (large)	*Helisoma*		*Dreissena*	large worms
15		off flashing red buoy	9.1	5/5	grey, fine, silty ooze	snail, fingernail clam & unionid shells					✓	✓		fingernail (*Sphaerium*)	*Dreissena*	
16		Geneva Park	1.5	5/5	grey, soft, silty ooze	calcareous, unionid shell		*Potamogeton*			✓		*Amnicola, Helisoma, Physa*		*Dreissena*	
17		off mouth of Sucker Cr., south of Fern Bay	1.5	3/5	grey, sandy, silty ooze, H_2S odour	calcareous, clam & unionid shells, wood	✓				✓ (red)				*Dreissena*	
18		north of Atherley, off Couchuching Point	1.5	4/5	brown, silty sand			*Myriophyllum, Elodea*	✓ (abundant)		✓		*Bythinia, Cincinnatia*	fingernail	*Dreissena*	large worms
19		off Moose Beach	2.1	4/5	grey, silty ooze	clam & unionid shells	✓				✓			fingernail	*Dreissena*	crayfish

Appendix C

Appendix C - Station Location Information

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Figure C-1. Map of Lake Couchiching showing locations of the 25 stations at which currents were characterized.

Figure C-2. Map of Lake Couchiching showing locations of the three transects along which macrophytes were characterized.

Table C.1. Sampling Locations and Coordinates.

Station Number	Location / Description	Water Depth, m	Metres from shore	Coordinates (NAD83) Northing, m	Easting, m
1	west shore, 70 m southeast of Orillia Marina break wall; off Cedar Island	2.0		4941010	626400
2	west shore, off Couchiching Beach Park	2.8	150	4941690	626081
3	west shore, 300 m north of Orillia water intake structure	2.7	300	4942327	626123
4	west shore, off Tafton; 525 m off Wilson Point	2.2		4943947	626076
5	in centre of south basin; 1000 m south of Chiefs Island	9.0		4944015	628261
6	west shore, halfway between red buoy SC6 and Wilson Point	3.2		4944651	626586
7	west shore, off Woods Bay	2.1	300	4945263	626186
8	west shore, off Amigo Beach	1.4	240	4949501	627734
9	west shore, off Cumberland Beach Point	2.1		4950735	628064
10	west shore, in centre of Cunningham Bay	1.8	240	4951596	628278
11	west shore, off small tributary north of Scarlet Park	2.0	430	4953889	630121
12	north end, 120 m east of green buoy S263 (Washago)	1.7		4955588	631488
13	east shore, off Floral Point	1.8	125	4953966	631163
14	east shore, off YMCA camp, in centre of small bay south of Floral Park	3.2	80	4951427	631186
15	in centre of north basin; 1200 m northwest of Geneva Park Point	9.8		4949644	628766
16	east shore, off Geneva Park	1.5	115	4948143	630197
17	east shore, off Casino Rama WTP & at discharge	6.8	435	4945939	629840
18	east shore, off mouth of Sucker Creek	1.4	110	4943206	630323
19	south end, 400 m south of Nadie Island; east of buoy S305 (Atherley)	1.8		4941423	629450
20	south end, off Moose Beach	2.1	200	4940769	627811
21	middle, in bay north of Chiefs Island	2.6		4945912	628132

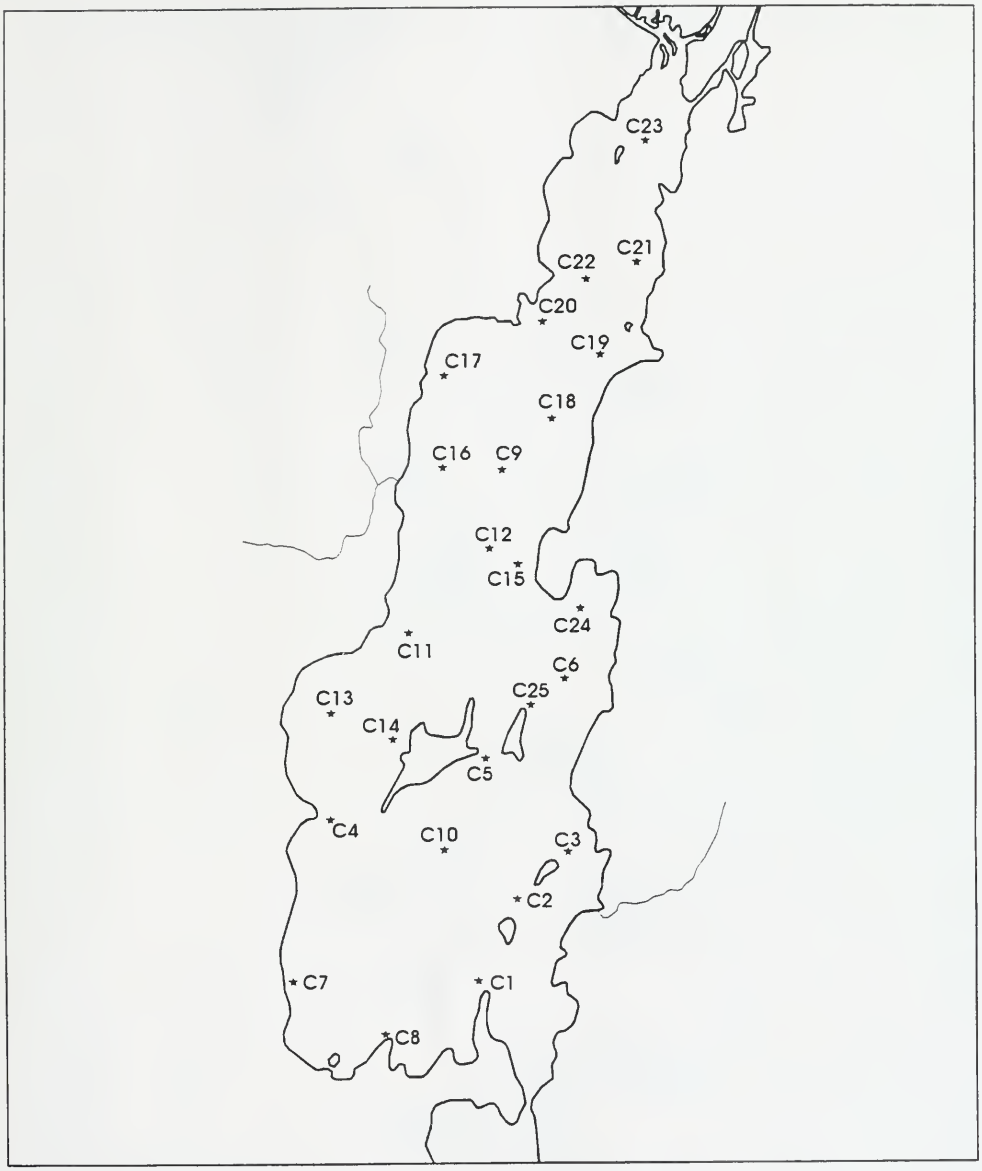

Figure C-1. Map of Lake Couchiching showing locations of the 25 stations at which currents were characterized.

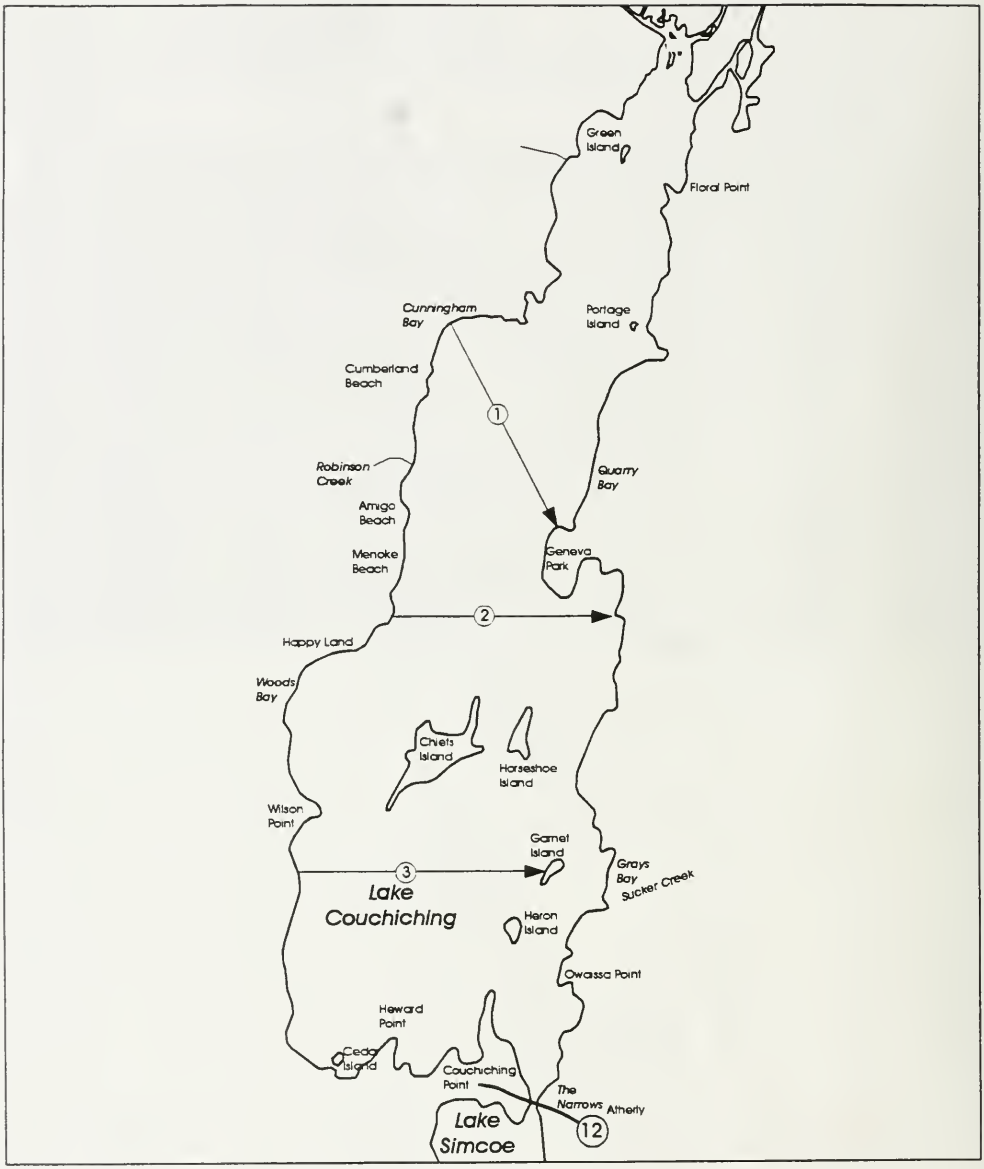

Figure C-2. Map of Lake Couchiching showing locations of the three transects along which macrophytes were characterized.

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Table D-1. On-board physical-chemical measurements of Lake Couchiching waters.
Concentration units as noted: mg/l = ppm; NTU = Nephelometric Turbidity Units.

Station Number	Sample Date	Field Sample Number	Water Depth, m	Sample Depth, m	Temperature degrees C	pH -log[H+]	Oxygen, dissolved mg/l	Oxygen, % saturation	Conductivity umhos/cm@25C	Turbidity NTU	Current Speed cm/sec	Current Direction magnetic North
1	97/06/03	76837	1 90	0 30	15 31	8 51	10 76	107 6	339	4 2	--	--
"	"	"	"	1 00	15 33	8 50	10 75	107 6	339	4 5	--	--
"	"	"	"	1 50	15 31	8 51	10 80	108 0	339	4 5	--	--
"	97/05/28	--	"	1 75	14 50	--	--	--	--	--	0 0	145
"	97/07/08	48619	1 90	0 30	20 27	8 13	8 36	92 6	329	0 0	--	--
"	"	"	"	1 50	20 25	8 26	8 43	93 3	329	0 0	--	--
2	97/06/03	76838	2 70	0 50	15 34	8 52	10 84	108 4	339	4 6	--	--
"	"	"	"	1 00	15 34	8 49	10 80	108 4	339	4 6	--	--
"	"	"	"	2 00	15 29	8 49	10 90	108 4	339	4 6	--	--
"	"	"	"	2 40	15 28	8 49	10 90	108 4	339	4 5	--	--
"	97/05/28	--	"	2 55	15 63	--	--	--	--	--	0 6	131
"	97/07/08	48618	2 80	0 40	20 19	8 17	8 07	89 2	330	0 0	--	--
"	"	"	"	1.50	20 22	8 22	8 08	89 4	330	0 0	--	--
"	"	"	"	2 50	20 21	8 22	8 04	88 9	330	0.0	--	--
3	97/06/03	76839	2 80	0 30	15 57	8 45	10 79	108 5	338	4 5	--	--
"	"	"	"	1 10	15 60	8 47	10 73	107 9	338	4 3	--	--
"	"	"	"	2 00	15 47	8 49	10 89	109 2	337	4 4	--	--
"	97/05/28	--	"	2 65	15 93	--	--	--	--	--	0 0	30
"	97/07/08	48617	2 50	0 60	20 39	8 10	7 94	88 1	331	0 1	--	--
"	"	"	"	1 60	20 38	8 18	7 95	88 2	331	0 5	--	--
"	"	"	"	2 20	20 37	8 19	7 96	88 3	332	0 6	--	--
4	97/06/03	76840	2 00	0 50	15 95	8 33	10 10	102 3	338	5 7	--	--
"	"	"	"	1 00	15 98	8 37	10 12	102 6	338	5 8	--	--
"	"	"	"	1 50	15 96	8 34	10 09	102 2	338	8 5	--	--
"	97/05/28	--	"	1 85	16 85	--	--	--	--	--	3 0	190
"	97/07/08	48616	2 00	0 30	20 17	8 20	8 28	91 5	330	0 0	--	--
"	"	"	"	1 50	20 16	8 24	8 37	92 5	331	0 0	--	--
5	97/06/03	76841	9 20	0 50	14 69	8 58	8 01	79 0	339	4 3	--	--
"	"	"	"	1 20	14 66	8 51	7 06	69 6	339	4 3	--	--
"	"	"	"	2 00	14 63	8 50	6 72	66 2	339	4 1	--	--
"	"	"	"	3 00	14 64	8 54	6 69	65 9	339	4 1	--	--
"	"	"	"	4 00	14 48	8 48	6 43	63 1	339	4 5	--	--
"	"	"	"	5 00	14 46	8 55	6 26	61 4	339	4 7	--	--
"	"	"	"	6 00	14 42	8 49	6 15	60 3	339	4 5	--	--
"	"	"	"	7 10	12 87	8 42	6 26	59 3	338	4 6	--	--
"	"	"	"	8 00	12 31	8 39	6 29	58 9	339	4 9	--	--
"	97/05/28	--	"	9 05	13 68	--	--	--	--	--	0 0	95
"	97/07/08	48615	9 00	0 30	20 60	8 23	8 29	92 4	331	0 0	--	--
"	"	"	"	1 00	20 60	8 25	8 31	92 6	331	0 0	--	--
"	"	"	"	1 90	20 60	8 27	8 31	92 5	331	0 0	--	--
"	"	"	"	4 00	20 60	8 27	8 29	92 4	331	0 0	--	--
"	"	"	"	6 00	20 59	8 26	8 28	92 2	331	0 0	--	--
"	"	"	"	8 00	20 57	8 25	8 24	91 8	330	0 0	--	--
6	97/06/03	76844	3 00	0 50	17 10	8 34	--	--	337	0 0	--	--
"	"	"	"	1 00	16 87	8 34	--	--	336	0 0	--	--
"	"	"	"	2 00	16 13	8 41	--	--	336	0 2	--	--

Table D-1. On-board physical-chemical measurements of Lake Couchiching waters.
Concentration units as noted. mg/l = ppm; NTU = Nephelometric Turbidity Units.

Station Number	Sample Date	Field Sample Number	Water Depth, m	Sample Depth, m	Temperature degrees C	pH -log[H+]	Oxygen, dissolved mg/l	Oxygen, % saturation	Conductivity umhos/cm@25C	Turbidity NTU	Current Speed cm/sec	Current Direction magnetic North
"	"	"	"	2.40	16.16	8.40	--	--	335	0.4	--	--
"	97/05/28	--	"	2.85	16.13	--	--	--	--	--	2.7	210
"	97/07/08	48613	3.00	0.50	20.45	8.25	8.46	94.0	330	0.0	--	--
"	"	"	"	1.00	20.43	8.27	8.43	93.7	330	0.0	--	--
"	"	"	"	2.00	20.44	8.28	8.43	93.7	330	0.0	--	--
"	"	"	"	2.50	20.44	8.28	8.43	93.7	329	0.0	--	--
7	97/06/03	76845	2.20	0.40	16.92	8.47	--	--	328	0.0	--	--
"	"	"	"	1.10	17.15	8.45	--	--	330	0.0	--	--
"	"	"	"	1.60	17.01	8.46	--	--	329	0.0	--	--
"	97/05/29	--	"	2.05	14.80	--	--	--	--	--	3.6	135
"	97/07/08	48612	2.20	0.40	20.01	8.20	7.93	87.3	328	0.0	--	--
"	"	"	"	1.50	20.02	8.18	7.87	86.7	329	0.1	--	--
8	97/06/03	76848	1.30	0.60	17.34	8.27	--	--	329	0.1	--	--
"	"	"	"	0.90	17.30	8.39	--	--	329	0.0	--	--
"	97/05/29	--	"	1.15	15.20	--	--	--	--	--	7.1	105
"	97/07/07	48607	1.40	0.20	22.13	8.68	11.46	131.6	797	0.0	--	--
"	"	"	"	1.20	22.15	8.72	11.29	129.7	797	0.0	--	--
9	97/06/03	76849	2.00	0.50	16.59	8.53	--	--	331	0.0	--	--
"	"	"	"	1.00	16.67	8.43	--	--	332	0.0	--	
"	"	"	"	1.50	16.47	8.45	--	--	331	0.0	--	--
"	97/05/29	--	"	1.85	15.02	--	--	--	--	--	0.8	67
"	97/07/07	48606	2.20	0.60	22.01	8.37	8.88	101.7	324	0.0	--	--
"	"	"	"	1.50	22.00	8.44	8.97	102.7	323	0.0	--	--
10	97/06/03	76850	1.70	0.60	16.75	8.40	--	--	334	0.0	--	--
"	"	"	"	1.00	16.66	8.33	--	--	334	0.0	--	--
"	--	--	"	1.55	--	--	--	--	--	--	--	--
"	97/07/07	48605	1.60	0.20	21.94	8.42	8.83	101.0	324	0.0	--	--
"	"	"	"	1.10	21.95	8.40	8.78	100.4	324	0.0	--	--
11	97/06/03	76851	1.90	0.50	17.62	8.48	--	--	329	0.0	--	--
"	"	"	"	0.90	17.60	8.35	--	--	328	0.3	--	--
"	"	"	"	1.40	17.57	8.36	--	--	328	0.0	--	--
"	--	--	"	1.75	--	--	--	--	--	--	--	--
"	97/07/07	48604	1.90	0.20	21.90	8.60	10.23	116.9	315	0.3	--	--
"	"	"	"	1.10	21.92	8.64	9.91	113.3	315	0.0	--	--
"	"	"	"	1.50	21.93	8.66	10.15	116.1	315	0.0	--	--
12	97/06/03	76852	1.50	0.50	16.64	8.47	--	--	330	0.0	--	--
"	"	"	"	1.00	16.60	8.42	--	--	329	0.0	--	--
"	--	--	"	1.35	--	--	--	--	--	--	--	--
"	97/07/07	48602	1.40	0.40	22.04	8.43	9.47	108.5	317	0.7	--	--
"	"	"	"	1.00	22.05	8.48	9.46	108.4	317	0.7	--	--
13	97/06/03	76853	1.70	0.50	15.74	8.48	--	--	331	0.0	--	--
"	"	"	"	1.00	15.70	8.45	--	--	331	0.0	--	--
"	--	--	"	1.55	--	--	--	--	--	--	--	--
"	97/07/07	48603	1.70	0.50	21.87	8.39	9.12	104.1	322	0.0	--	--
"	"	"	"	1.30	21.88	8.39	9.02	103.1	322	0.0	--	--
14	97/06/03	76854	3.00	0.50	15.15	8.49	--	--	333	0.7	--	--
"	"	"	"	1.00	14.96	8.50	--	--	333	0.6	--	--

Table D-1. On-board physical-chemical measurements of Lake Couchiching waters.

Concentration units as noted mg/l = ppm; NTU = Nephelometric Turbidity Units.

Station Number	Sample Date	Field Sample Number	Water Depth, m	Sample Depth, m	Temperature degrees C	pH -log[H+]	Oxygen, dissolved mg/l	Oxygen, % saturation	Conductivity umhos/cm@25C	Turbidity NTU	Current Speed cm/sec	Current Direction magnetic North
"	"	"	"	2 00	14 50	8 51	--	--	332	0 9	--	--
"	"	"	"	2 50	14 24	8 51	--	--	333	0 8	--	--
"	97/06/02	--	"	2 85	14 85	--	--	--	--	--	0 2	141
"	97/07/08	48608	2 90	0 60	21 01	8 35	8 72	97 9	321	0 0	--	--
"	"	"	"	1.00	20 92	8 37	8 58	96 2	322	0 0	--	--
"	"	"	"	2 00	20 65	8 35	8 40	93 7	323	0 0	--	--
"	"	"	"	2 50	20 57	8 36	8 45	94 1	322	0 0	--	--
15	97/06/03	76855-DC	9 70	0 50	15 89	8 46	--	--	334	2 0	--	--
"	"	"	"	1 60	15 80	8 46	--	--	334	2 2	--	--
"	"	"	"	3 00	15 44	8 47	--	--	333	2 6	--	--
"	"	"	"	4 00	15.12	8 50	--	--	333	2 8	--	--
"	"	"	"	5 00	14 87	8 50	--	--	334	2 9	--	--
"	"	"	"	6 00	14 47	8 50	--	--	335	2 9	--	--
"	"	"	"	7 00	13 24	8 45	--	--	334	2 8	--	--
"	"	"	"	8 00	12 95	8 42	--	--	335	2 6	--	--
"	"	"	"	9 00	12 41	8 34	--	--	335	1 9		
"	97/06/02	--	"	9 55	14 52	--	--	--	--	--	0 0	180
"	97/07/08	48610-DC	9 60	0 50	21 03	8 35	8 27	93 0	326	0 1	--	--
"	"	"	"	2 00	21 04	8 34	8 28	93 0	326	0 0	--	--
"	"	"	"	4 00	21 03	8 35	8 26	92 8	326	0 0	--	--
"	"	"	"	6 00	21 04	8 34	8 26	92 8	326	0 0	--	--
"	"	"	"	8 00	21 03	8 33	8 26	92 8	326	0 0	--	--
"	"	"	"	9 00	21 03	8 34	8 26	92 8	326	0 1	--	--
16	97/06/03	76856	1 50	0 60	16 89	8 34	--	--	339	0 6	--	--
"	"	"	"	1 00	16 90	8 27	--	--	339	0 0	--	--
"	97/06/02	--	"	1 35	19 26	--	--	--	--	--	0 0	259
"	97/07/08	48611	1 30	0 50	20 31	8 27	8 94	99 1	326	0 0	--	--
"	"	"	"	1 00	20 31	8 32	9 13	101 2	326	0 0	--	--
17	97/06/03	76857	7 00	0 50	15 64	8 50	--	--	339	0 0	--	--
"	"	"	"	1 00	15 57	8 43	--	--	339	0 0	--	--
"	"	"	"	2 00	15 54	8 40	--	--	339	0 0	--	--
"	"	"	"	3 00	14 60	8 43	--	--	337	0 0	--	--
"	"	"	"	4 00	14 29	8 43	--	--	336	0 0	--	--
"	"	"	"	5 00	13 46	8 37	--	--	338	0 1	--	--
"	"	"	"	6 00	13 13	8 28	--	--	340	0 8	--	--
"	97/06/02	--	"	6 85	14 00	--	--	--	--	--	0 0	340
"	97/07/08	48624	7.00	0 40	20 45	8 24	8 52	94 6	331	0 2	--	--
"	"	"	"	1 90	20 45	8 30	8 51	94 6	331	0 1	--	--
"	"	"	"	4 00	20 45	8 30	8 51	94 5	331	0 1	--	--
"	"	"	"	6 00	20 45	8 29	8 50	94 5	331	0 5	--	--
18	97/06/03	76859	1 20	0 50	16 58	8 49	--	--	340	3 5	--	--
"	97/05/29	--	"	1 05	15 63	--	--	--	--	--	0 0	195
"	97/07/08	48622	1 30	0 30	19 22	8 59	9 66	104 7	327	0 0	--	--
"	"	"	"	0 80	19 22	8 42	9 64	104 5	327	0 0	--	--
19	97/06/03	76860	1.70	0 60	15 00	8 46	--	--	339	0 4	--	--
"	"	"	"	1 00	15 03	8 45	--	--	339	0 4	--	--
"	97/05/29	--	"	1 55	12 87	--	--	--	--	--	0 0	--

Table D-1. On-board physical-chemical measurements of Lake Couchiching waters.

Concentration units as noted: mg/l = ppm; NTU = Nephelometric Turbidity Units.

Station Number	Sample Date	Field Sample Number	Water Depth, m	Sample Depth, m	Temperature degrees C	pH -log[H+]	Oxygen, dissolved mg/l	Oxygen, % saturation	Conductivity umhos/cm@25C	Turbidity NTU	Current Speed cm/sec	Current Direction magnetic North
"	97/07/08	48621	1 80	0 50	19 41	8 38	9 06	98 7	335	0 0	--	--
"	"	"	"	1 50	19 43	8 44	9 12	99 3	336	0 0	--	--
20	97/06/03	76843	2 10	0 50	15 57	8 51	--	--	336	0 0	--	--
"	"	"	"	1 00	15 65	8 49	--	--	335	0 0	--	--
"	"	"	"	1 50	15 44	8 50	--	--	334	0 0	--	--
"	97/05/29	--	"	1 95	13 67	--	--	--	--	--	0 0	--
"	97/07/08	48620	2 00	0 50	19 86	8 24	8 48	93 1	327	0 0	--	--
"	"	"	"	1 50	19 85	8 27	8 57	94 0	327	0 0	--	--
21	97/06/03	76846	2 50	0 30	16 54	8 39	--	--	336	0 0	--	--
"	"	"	"	1 00	16 31	8 35	--	--	335	0 0	--	--
"	"	"	"	2 00	15 56	8 41	--	--	333	0 0	--	--
"	97/06/02	--	"	2 35	17 20	--	--	--	--	--	0 0	172
"	97/07/07	48601	2 20	0 40	21 22	8 29	8 69	98 1	329	0 9	--	--
"	"	"	"	1 60	21 22	8 27	8 49	95 7	329	1 6	--	--
Mean & Std Dev'n,	97/06/03				15 93 +/-0 86	8 44 +/-0 07	9 28 +/-2 78	92 8 +/-28 1	335 +/-3 8	1 68 +/-2 21	--	--
Mean & Std Dev'n,	97/07/07-08				20 76 +/-0 83	8 34 +/-0 14	8 77 +/-0 77	98 1 +/-9 6	326 +/-7 6	0 12 +/-0 30	--	--
PWQO					--	6 5-8 5	4@20C-7@0C	47-48	--	--	--	--
IPWQO					--	--	--	--	--	--	--	--

NOTES blank or "--" indicates that data is not available for this parameter or sample

Dissolved Oxygen guideline range is for warmwater fishes

TABLE D-2 . Current speed, direction and temperature of Lake Couchiching waters (June 4-6 measurements, using Mini-Aanderaa meters).

Station Number SWS	Sample Date	Water Depth, m	Meter Depth, m	Current Speed cm/sec							Current Heading degrees from magnetic North				Temperature degrees C					
				Vector Mean	Mean *	Min	Max	n	Std Dev'n *	% Coeff Var'n	Vector Mean	Min	Max	n	Mean *	Min.	Max	Std Dev'n *	n	% Coeff Var'n
C1	97/06/04	3 9	1 0	1 3	3 7	2 4	5 0	21	0 8	22	263	0	330	21	18 90	18 35	19 37	0 28	21	1 5
"	"	"	2 9	3 8	5 4	3 3	7 5	21	1 2	22	341	0	345	21	18 11	17 60	18 93	0 33	21	1 8
C2	97/06/04	2 9	1 4	2 8	3 0	2 4	4 1	20	0 5	17	346	0	345	20	19 04	18 94	19 20	0 09	17	0 5
C3	97/06/04	2 9	1 4	3 2	3 9	2 4	5 0	19	0 7	18	327	0	345	29	19 39	19 09	19 77	0 24	18	1 2
C4	97/06/04	2 7	1 2	2 6	5 9	3 3	9 2	18	1 9	32	87	0	240	18	20 61	20 19	20 82	0 20	17	1 0
C5	97/06/04	3 7	2 2	3 4	3 5	2 4	4 5	15	0 7	20	19	0	30	15	19 08	18 77	19 84	0 28	13	1 5
C6	97/06/04	8 2	1 5	5 3	9 4	7 1	11 3	21	1 1	12	97	45	345	21	19 30	18 97	19 96	0 24	18	1 2
"	"	"	6 7	0 8	5 2	3 3	6 2	21	0 8	15	38	0	330	21	14 44	14 20	14 96	0 26	17	1 8
C7	97/06/04	2 7	1 2	2 1	3 9	0 0	5 4	11	1 4	36	151	90	270	11	18 99	18 85	19 05	0 08	6	0 4
C8	97/06/04	2 9	1 4	8 3	11 2	7 5	12 6	10	1 8	16	78	30	255	10	19 72	19 56	19 82	0 10	5	0 5
C9	97/06/04-05	9 7	2 0	0 2	0 2	0 0	2 8	123	0 7	350	316	0	345	123	16 97	16 70	17 85	0 27	118	1 6
"	"	"	7 7	1 9	4 7	0 0	9 2	124	2 6	55	212	30	255	124	13 84	13 18	14 51	0 37	119	2 7
"	97/06/05-06	9 0	2 0	0 3	0 5	0 0	4 5	133	1 1	220	102	0	345	133	17.74	17 33	18 44	0 25	128	1 4
"	"	"	7 0	S	0 0	0 0	0 0	133	–	–	S	0	345	133	13 96	13 41	14 69	0 36	130	2 6
C10	97/06/04-05	9 0	2 0	0 3	0 3	0 0	4 1	113	1 0	333	63	30	180	113	16 89	16 65	17 90	0 26	108	1 5
"	"	"	7 0	0 2	0 3	0 0	5 0	114	1 0	333	85	0	345	114	15 00	14 33	16 99	0 70	114	4 7
C11	97/06/04	7 0	1 5	0 7	2 0	0 0	5 4	12	1 7	85	321	15	345	12	19 34	18 92	19 74	0 27	11	1 4
"	"	"	5 5	0 2	1 3	0 0	6 2	12	2 1	162	250	60	255	12	15 50	15 33	15 84	0 15	9	1 0
C12	97/06/05	7 0	1 5	0.7	1 5	0 0	3 7	10	1 6	107	328	150	345	10	19 27	19 09	19 43	0 13	9	0 7
"	"	"	5.5	S	0 0	0 0	0 0	9	–	–	S	0	345	9	16 61	16 45	16 82	0 14	8	0 8
C13	97/06/05	3 3	1 8	1 1	1 3	0 0	5 0	8	2 0	154	27	15	345	8	19 73	19 64	19 81	0 06	6	0 3
C14	97/06/05	3 5	1 5	2 0	2 1	0 0	3 7	7	1 5	71	292	270	315	7	21 28	21 18	21 39	0 08	5	0 1
C15	97/06/05	8 0	1 5	3 7	3 8	3 3	4 1	8	0 4	11	11	0	15	8	19 88	19 84	19 91	0 04	4	0 2
"	"	"	6 5	2 8	3 0	2 4	4 1	8	0 5	17	43	30	75	8	14 90	14 74	15 31	0 21	6	1 4
C16	97/06/05	3 0	1 5	1 3	2 0	0 0	3 3	7	1.4	70	317	60	330	7	20 93	20 41	21 94	0 63	5	3 0
C17	97/06/05	3 2	1 7	1 5	1 9	0 0	4 1	6	1 6	84	311	0	300	6	20 10	19 71	20 54	0 35	4	1 7
C18	97/06/05	3 0	1 5	1 6	3 4	2 4	5 0	14	0 8	24	184	15	330	14	19 90	19 87	19 91	0 02	9	0 1
C19	97/06/05	3 9	2 4	2 1	4 2	2 4	6 2	18	1 4	33	346	0	345	18	19 65	19 34	19 93	0 19	16	1 0
C20	97/06/05	3 2	1 7	1 1	3 6	2 4	6 2	14	1 2	33	330	0	330	14	20 20	20.07	20 57	0 13	12	0 6
C21	97/06/05	2 8	1 3	1 8	2 7	0 0	3 7	8	1 2	44	183	15	240	8	20 68	20 58	20 82	0 08	6	0 4
C22	97/06/05-06	3 2	1 7	0 3	0 4	0 0	6 2	135	1 3	325	341	0	345	135	18 29	17 87	19 67	0 43	133	2 4
C23	97/06/05-06	2 7	1 2	1 1	1 2	0 0	6 2	132	1 9	158	44	0	345	132	19 29	18 38	21 50	0 85	131	4 4
C24	97/06/06	3 0	1 5	0 5	1.5	0 0	3 3	7	1 4	93	198	60	315	7	19 59	19 45	19 86	0 20	6	1 0
C25	97/06/06	3 0	1 5	2 8	3 0	2 4	3 7	10	0 5	17	257	225	300	10	18 78	17 06	20 09	1 48	10	7 9

Table D-3. Macro-ion, nutrient and phenolics concentrations in Lake Couchiching water samples.
Concentration units as noted.

Station Number	Sample Date	Field Sample Number	Conductivity µs/cm@25C	pH -log[H+]	Hardness mg/l	Carbon, dissolved Inorganic mg/l	Carbon, dissolved Organic mg/l	Carbon, total Organic mg/l	Carbon, total particulate mg/l	Calcium mg/l	Chloride mg/l	Magnesium mg/l	Potassium mg/l	Sodium mg/l
1	97/06/03	76837	345	8.21	136	26.0	3.9	4.6	0.2 <=W	43.1	26.8	6.78	1.87	15.4
"	97/07/08	48619	337	8.33	133	26.4	4.2	4.8	0.2 <=W	41.6	26.8	7.04	1.85	15.7
2	97/06/03	76838	344	8.30	133	26.6	3.9	4.4	0.2 <=W	42.0	26.8	6.80	1.83	16.1
"	97/07/08	48618	339	8.31	134	26.4	4.2	5.0	0.2 <=W	42.1	26.8	7.00	1.97	15.9
3	97/06/03	76839	345	8.08	136	26.4	3.9	6.2	0.2 <=W	43.4	26.8	6.84	1.84	15.5
"	97/07/08	48617	340	8.30	135	27.0	4.2	4.8	0.2 <=W	42.4	26.6	7.04	1.98	15.9
4	97/06/03	76840	343	8.21	135	26.4	3.8	4.4	0.2 <=W	43.1	26.8	6.74	1.80	15.7
"	97/07/08	48616	340	8.32	135	26.4	4.2	4.8	0.2 <=W	42.2	27.2	7.16	2.01	16.2
5	97/06/03	76841	345	8.27	132	26.6	3.7	5.0	0.2 <=W	41.7	26.6	6.72	1.86	15.5
"	"	76842-DC	345	8.24	126	26.6	3.8	4.6	0.2 <=W	39.6	26.6	6.64	1.85	15.7
"	97/07/08	48614-DC	340	8.33	132	26.8	4.2	7.0	0.8 <T	41.4	26.8	7.00	1.92	15.7
"	"	48615	339	8.31	134	27.2	4.2	5.2	0.2 <=W	42.0	26.8	7.06	2.02	15.8
6	97/06/03	76844	342	8.11	135	26.0	3.7	5.2	0.2 <=W	42.8	26.8	6.72	1.86	15.4
"	97/07/08	48613	339	8.30	132	26.6	4.4	9.0	0.8 <T	41.0	26.8	7.04	1.92	15.9
7	97/06/03	76845	335	8.27	131	25.2	3.8	5.6	0.2 <=W	41.4	27.2	6.68	1.82	15.2
"	97/07/08	48612	337	8.29	131	27.2	4.2	5.2	0.2 <=W	41.0	26.6	6.96	1.91	16.0
8	97/06/03	76848	335	8.26	131	25.4	3.9	4.8	1.6	41.4	26.8	6.64	1.79	15.6
"	97/07/07	48607	305	8.50	112	21.6	4.7	5.2	0.4 <T	33.8	27.2	6.84	1.82	15.2
9	97/06/03	76849	337	8.22	132	25.8	3.8	4.2	0.2 <=W	42.0	27.0	6.56	1.81	15.4
"	97/07/07	48606	330	8.34	127	24.8	4.1	4.4	5.2	39.4	26.8	6.86	1.85	15.1
10	97/06/03	76850	340	8.29	133	25.8	3.8	4.8	0.2 <=W	42.5	27.0	6.60	1.78	15.4
"	97/07/07	48605	330	8.35	126	24.6	4.0	5.2	0.2 <=W	39.2	27.2	6.86	1.84	15.2
11	97/06/03	76851	335	8.24	130	25.6	3.8	4.6	0.2 <=W	41.0	26.8	6.62	1.82	15.7
"	97/07/07	48604	322	8.55	122	23.8	4.4	5.2	0.2 <=W	37.6	26.8	6.80	1.82	15.4
12	97/06/03	76852	336	8.34	129	25.2	3.9	4.2	0.2 <=W	41.0	26.8	6.54	1.79	15.7
"	97/07/07	48602	322	8.36	123	24.2	4.3	5.4	0.2 <=W	38.1	26.8	6.88	1.85	17.4
13	97/06/03	76853	340	8.24	132	25.4	3.8	4.0	0.2 <=W	42.0	26.8	6.62	1.81	15.8
"	97/07/07	48603	329	8.36	124	24.4	4.2	5.4	0.2 <=W	38.5	26.8	6.84	1.84	15.5
14	97/06/03	76854	341	8.28	134	26.2	3.8	4.0	0.2 <=W	42.8	26.8	6.60	1.82	15.7
"	97/07/08	48608-R	330	8.34	128	25.2	4.4	4.8	1.2	39.6	27.0	7.00	1.91	16.0
"	"	48609-R	332	8.31	127	25.4	4.4	4.8	0.2 <=W	39.5	27.0	6.94	1.92	16.0
15	97/06/03	76855-DC	342	8.29	135	25.8	3.8	4.2	0.2 <=W	42.8	26.8	6.74	1.81	16.0
"	97/07/08	48610-DC	335	8.33	129	26.2	4.2	5.6	0.2 <=W	40.3	26.8	6.96	1.94	15.9
16	97/06/03	76856	346	8.24	132	26.6	3.9	4.2	0.2 <=W	41.7	26.8	6.80	1.89	15.8
"	97/07/08	48611	335	8.30	129	26.2	4.4	5.2	0.2 <=W	40.1	27.0	6.98	1.99	15.8
17	97/06/03	76857-R	345	8.37	138	27.0	3.8	5.0	0.2 <=W	44.1	26.6	6.88	1.85	15.5
"	"	76858-R	346	8.31	131	27.2	3.8	4.4	0.2 <=W	41.1	26.6	6.88	1.85	15.7
"	97/07/08	48624	340	8.34	136	26.0	4.0	5.2	0.2 <=W	42.4	26.8	7.24	1.87	15.9
18	97/06/03	76859	348	8.29	136	27.6	4.1	5.0	0.2 <=W	43.2	26.4	6.88	1.87	15.3
"	97/07/08	48622-R	338	8.37	137	26.0	4.4	5.2	0.2 <=W	43.1	26.4	7.14	1.78	15.6
"	"	48623-R	338	8.40	134	26.4	4.4	5.8	0.2 <=W	42.0	26.2	7.16	1.77	15.4
19	97/06/03	76860	347	8.28	134	26.8	3.7	4.6	0.2 <=W	42.6	26.4	6.82	1.85	15.1
"	97/07/08	48621	345	8.42	140	26.6	3.8	4.4	0.2 <=W	44.4	26.8	7.04	1.85	15.7
20	97/06/03	76843	341	8.28	134	26.4	3.9	4.6	0.2 <=W	42.6	26.6	6.76	1.84	15.3
"	97/07/08	48620	337	8.33	132	26.8	4.3	4.6	0.4 <T	41.3	26.8	7.04	1.89	15.9
21	97/06/03	76846-R	340	8.34	134	26.4	3.7	5.6	0.2 <=W	42.7	26.8	6.64	1.80	15.4

Table D-3. Macro-ion, nutrient and phenolics concentrations in Lake Couchiching water samples.
Concentration units as noted.

Station Number	Sample Date	Field Sample Number	Conductivity µs/cm@25C	pH -log[H+]	Hardness mg/l	Carbon, dissolved Inorganic mg/l	Carbon, dissolved Organic mg/l	Carbon, total Organic mg/l	Carbon, total particulate mg/l	Calcium mg/l	Chloride mg/l	Magnesium mg/l	Potassium mg/l	Sodium mg/l
"	"	76847-R	341	8 24	134	26 4	3 8	4 8	0 2 <=W	42 8	27 2	6 68	1 79	15 6
"	97/07/07	48601	335	8 30	130	26 0	4 3	6 0	0 2 <=W	40 6	26 6	6 96	1 86	17 3
Mean & Std Dev'n	97/06/03		342 +/-4 0	8 26 +/-0 06	133 +/-2 6	26 2 +/-0 6	3 8 +/-0 1	4 7 +/-0 5	0 2 <=W	42 2 +/-1 0	26 8 +/-0 2	6 72 +/-0 10	1 83 +/-0 03	15 6 +/-0 2
Mean & Std Dev'n	97/07/07-08		334 +/-8 4	8 35 +/-0 06	130 +/-6 0	25 8 +/-1 3	4 3 +/-0 2	5 3 +/-1 0	0 3 +/-1 1	40 6 +/-2 2	26 8 +/-0 2	6 99 +/-0 11	1 89 +/-0 07	15 8 +/-0 5
19	97/06/03	76861-SB	7	6 63	1 8	0 6 <T	0 1 <=W	0 2 <=W	0 8 <T	0 65	0 2 <=W	0 04 <T	0 01 <=W	0 28
"	"	76862-TB	2 <T	6 01	0 2 <=W	0 6 <T	0 1 <=W	0 2 <=W	0 6 <T	0 05 <=W	0 2 <=W	0 02 <=W	0 02 <T	0 32
17	97/07/08	48625-SB	3 <T	6 43	0 2 <=W	0 2 <=W	0 1 <=W	0 2 <=W	0 2 <=W	0 05 <=W	0 2 <=W	0 02 <=W	0 01 <=W	0 08 <T
"	"	48626-TB	2 <T	6 10	0 2 <=W	0 2 <=W	0 1 <=W	0 4 <T	0 2 <=W	0 05 <=W	0 2 <=W	0 02 <=W	0 01 <=W	0 08 <T
PWQO			--	6 5-8 5	--	--	--	--	--	--	--	--	--	--
IPWQO			--	--	--	--	--	--	--	--	--	--	--	--

NOTES "<MDL" = less than method detection limit
" <=W " = no measurable response (zero) less than reported value
"-R " = field temporal replicate
"- DC " = Depth Composite
"-SB " = System Blank
" -TB " = Travel Blank

Table D-3. Macro-ion, nutrient and phenolics concentrations in Lake Couchiching water samples.
Concentration units as noted.

Station Number	Sample Date	Field Sample Number	Sulphate mg/l	Nitrogen, NH_3+NH_4 mg/l		Nitrogen, NO_2 mg/l		Nitrogen, NO_2+NO_3 mg/l		Nitrogen, TKN mg/l	Phosphorus, PO_4 mg/l		Phosphorus, total mg/l		Silicon, reactive mg/l	Phenolics, 4AAP ug/l	
1	97/06/03	76837	17 5	0 012		0 001	<=W	0 005	<=W	0 36	0 0005	<=W	0 006	<T	0 56	0 2	<=W
"	97/07/08	48619	17 0	0 018		0 005		0 015	<T	0 44	0 0005	<=W	0 012		1 46	0 8	<T
2	97/06/03	76838	17 5	0 002	<=W	0 001	<=W	0 005	<=W	0 36	0 0005	<=W	0 006	<T	0 58	0 2	<=W
"	97/07/08	48618	17 0	0 030		0 003	<T	0 010	<T	0 42	0 0005	<=W	0 016		1 44	0 4	<T
3	97/06/03	76839	18 0	0 008	<T	0 001	<=W	0 005	<=W	0 44	0 0005	<=W	0 006	<T	0 56	0 2	<=W
"	97/07/08	48617	17 0	0 022		0 004	<T	0 015	<T	0 44	0 0005	<=W	0 014		1 46	0 2	<=W
4	97/06/03	76840	17 5	0 008	<T	0 001	<=W	0 005	<=W	0 36	0 0005	<=W	0 006	<T	0 56	0 2	<=W
"	97/07/08	48616	16 5	0 028		0 007		0 015	<T	0 42	0 0005	<=W	0 010		1 40	0 4	<T
5	97/06/03	76841	18 0	0 008	<T	0 001	<=W	0 010	<T	0 40	0 0005	<=W	0 008	<T	0 76	--	
"	"	76842-DC	17 5	0 002	<=W	0 001	<=W	0 005	<=W	0 41	0 0005	<=W	0 008	<T	0 72	0 2	<=W
"	97/07/08	48614-DC	17 0	0 028		0 005		0 010	<T	0 44	0 0005	<=W	0 012		1 46	0 4	<T
"	"	48615	17 0	0 024		0 003	<T	0 010	<T	0 41	0 0005	<=W	0 010		1 46	0 2	<=W
6	97/06/03	76844	18 0	0 010		0 001	<=W	0 005	<=W	0 50	0 0005	<=W	0 008	<T	0 48	0 2	<=W
"	97/07/08	48613	16 5	0 018		0 003	<T	0 010	<T	0 44	0 0005	<=W	0 016		1 42	0 2	<T
7	97/06/03	76845	17 5	0 006	<T	0 001	<=W	0 005	<=W	0 34	0 0010	<T	0 004	<T	0 34	0 2	<=W
"	97/07/08	48612	16 5	0 022		0 004	<T	0 010	<T	0 42	0 0005	<=W	0 010		1 16	0 4	<T
8	97/06/03	76848	17 0	0 008	<T	0 001	<=W	0 005	<=W	0 34	0 0015	<T	0 006	<T	0 36	0 2	<=W
"	97/07/07	48607	16 0	0 018		0 001	<=W	0 025		0 48	0 0020	<T	0 010		1 04	0 4	<T
9	97/06/03	76849	17 5	0 006	<T	0 001	<=W	0 005	<=W	0 32	0 0010	<T	0 006	<T	0 44	0 2	<=W
"	97/07/07	48606	16 5	0 010		0 001	<=W	0 025		0 40	0 0020	<T	0 008	<T	0 94	0 4	<T
10	97/06/03	76850	17 5	0 010		0 001	<=W	0 005	<=W	0 32	0 0005	<=W	0 004	<T	0 46	0 2	<=W
"	97/07/07	48605	16 0	0 024		0 001	<=W	0 025		0 40	0 0020	<T	0 008	<T	0 94	0 4	<T
11	97/06/03	76851	17 5	0 010		0 001	<=W	0 005	<=W	0 34	0 0005	<=W	0 004	<T	0 38	0 2	<=W
"	97/07/07	48604	16 0	0 014		0 001	<=W	0 025		0 42	0 0020	<T	0 008	<T	1 00	0 2	<T
12	97/06/03	76852	17 5	0 010		0 001	<=W	0 005	<=W	0 36	0 0005	<=W	0 006	<T	0 44	0 2	<=W
"	97/07/07	48602	16 0	0 018		0 001	<=W	0 020	<T	0 42	0 0025		0 008	<T	1 06	0 4	<T
13	97/06/03	76853	17 5	0 010		0 001	<=W	0 005	<=W	0 34	0 0005	<=W	0 006	<T	0 50	0 2	<=W
"	97/07/07	48603	16 0	0 008	<T	0 001	<=W	0 025		0 40	0 0020	<T	0 008	<T	1 00	0 4	<T
14	97/06/03	76854	17 5	0 002	<=W	0 001	<=W	0 005	<=W	0 32	0 0005	<=W	0 006	<T	0 50	0 2	<=W
"	97/07/08	48608-R	16 5	0 018		0 002	<T	0 010	<T	0 40	0 0005	<=W	0 010		0 96	0 8	<T
"	"	48609-R	16 5	0 022		0 003	<T	0 010	<T	0 42	0 0005	<=W	0 010		0 96	0 4	<T
15	97/06/03	76855-DC	17 5	0 008	<T	0 001	<=W	0 005	<=W	0 36	0 0005	<=W	0 006	<T	0 50	0 2	<=W
"	97/07/08	48610-DC	16 5	0 018		0 002	<T	0 010	<T	0 42	0 0005	<=W	0 010		0 98	0 6	<T
16	97/06/03	76856	17 5	0 014		0 001	<=W	0 005	<=W	0 38	0 0005	<=W	0 006	<T	0 66	0 4	<T
"	97/07/08	48611	16 5	0 010		0 002	<T	0 005	<=W	0 42	0 0005	<=W	0 010		1 34	0 2	<T
17	97/06/03	76857-R	18 0	0 008	<T	0 001	<=W	0 005	<=W	0 34	0 0005	<=W	0 006	<T	0 76	0 2	<=W
"	"	76858-R	17 5	0 010		0 001	<=W	0 005	<=W	0 34	0 0005	<=W	0 006	<T	0 76	0 2	<=W
"	97/07/08	48624	17 0	0 018		0 002	<T	0 015	<T	0 42	0 0005	<=W	0 012		1 48	0 6	<T
18	97/06/03	76859	17 5	0 018		0 001	<=W	0 005	<=W	0 42	0 0005	<=W	0 016		0 90	0 2	<=W
"	97/07/08	48622-R	17 0	0 004	<T	0 002	<T	0 010	<T	0 44	0 0005	<=W	0 012		1 18	0 6	<T
"	"	48623-R	16 5	0 008	<T	0 002	<T	0 010	<T	0 42	0 0005	<=W	0 012		1 16	0 4	<T
19	97/06/03	76860	18 5	0 014		0 002	<T	0 025		0 32	0 0005	<=W	0 008	<T	1 08	0 2	<=W
"	97/07/08	48621	17 0	0 018		0 002	<T	0 015	<T	0 40	0 0005	<=W	0 012		1 12	0 4	<T
20	97/06/03	76843	17 5	0 012		0 001	<=W	0 005	<=W	0 36	0 0005	<=W	0 006	<T	0 60	0 2	<=W
"	97/07/08	48620	16 5	0 014		0 001	<=W	0 010	<T	0 44	0 0005	<=W	0 010		1 46	0 8	<T
21	97/06/03	76846-R	18 0	0 010		0 001	<=W	0 005	<=W	0 32	0 0010	<T	0 004	<T	0 48	0 2	<=W

Table D-3. Macro-ion, nutrient and phenolics concentrations in Lake Couchiching water samples.
Concentration units as noted.

Station Number	Sample Date	Field Sample Number	Sulphate mg/l	Nitrogen, NH_3+NH_4 mg/l	Nitrogen, NO_2 mg/l	Nitrogen, NO_2+NO_3 mg/l	Nitrogen, TKN mg/l	Phosphorus, PO_4 mg/l	Phosphorus, total mg/l	Silicon, reactive mg/l	Phenolics, 4AAP ug/l
"	"	76847-R	18 0	0 008 <T	0 001 <=W	0 005 <=W	0 32	0 0010 <T	0 006 <T	0 46	0 2 <=W
"	97/07/07	48601	16 0	0 016	0 001 <=W	0 025	0 42	0 0025	0 010	1 26	0 2 <=W
Mean & Std Dev'n	97/06/03		17 6 +/-0 3	0 009 +/-0 004	0 002 +/-0 002	0 006 +/-0 004	0 36 +/-0 05	0 0005 <=W	0 006 +/-0 002	0 58 +/-0 18	0 2 <=W
Mean & Std Dev'n	97/07/07-08		16 5 +/-0.4	0 018 +/-0 007	0 001 <=W	0 015 +/-0 007	0 42 +/-0 02	0 0006 +/-0 0010	0 011 +/-0 002	1 21 +/-0 21	0 4 +/-0 2
19	97/06/03	76861-SB	2 5 <T	0 002 <=W	0 001 <=W	0 005 <=W	0 02 <=W	0 0005 <=W	0 002 <=W	0 02 <=W	0 4 <T
"	"	76862-TB	2 5 <T	0 004 <T	0 001 <=W	0 005 <=W	0 02 <=W	0 0005 <=W	0 002 <=W	0 02 <=W	0 2 <=W
17	97/07/08	48625-SB	5 0	0 002 <=W	0 001 <=W	0 010 <T	0 02 <=W	0 0005 <=W	0 002 <=W	0 02 <=W	0 4 <T
"	"	48626-TB	5 0	0 002 <=W	0 001 <=W	0 010 <T	0 02 <=W	0 0005 <=W	0 002 <=W	0 02 <=W	--
PWQO			--	0 020	--	--	--	--	--	--	1
IPWQO			--	--	--	--	--	--	0 020	--	--

NOTES "<MDL" = less than method detection limit
" <=W " = no measurable response (zero) less than reported value
"-R " = field temporal replicate
"- DC " = Depth Composite
"-SB " = System Blank
" -TB " = Travel Blank

Table D-4. Physical factors, chlorophyll and bacterial concentrations in Lake Couchiching water samples in June and July 1997.

Concentration units as noted: mg/l = ppm; ug/l = ppb; counts/dl = counts/100 ml; TCU = total colourimetric units; FTU = Formazin colourimetric units.

Station Number	Sample Date	Field Sample Number	Water Depth, m	Sample Depth, m	Secchi Depth, m	Colour, true TCU	Turbidity FTU	Suspended Solids, mg/l	Chlorophyll a, total ug/l	Chlorophyll b, total ug/l	Chlorophyll a, corrected ug/l	*Escherichia coli* counts/dl	Fecal *Streptococcus* counts/dl	*Pseudomonas aeruginosa* counts/dl
1	97/06/03	76837	1.9	1.0	1.9	4.6	0.83	1.0 <=W	2.6	0.3 <T	2.0 <T	36	18	0
"	97/07/08	48619	1.9	1.0	1.9	4.8	0.56	1.0 <T	1.0	0.1 <=W	1.0 <=W	4	2 <	0
2	97/06/03	76838	2.7	1.0	2.7	4.6	0.68	1.0 <=W	1.6	0.2 <T	1.0 <=W	2 <	2 <	0
"	97/07/08	48618	2.8	1.0	2.8	4.4	0.60	1.0 <T	1.0	0.1 <=W	1.0 <=W	2 <	2 <	0
3	97/06/03	76839	2.8	1.0	2.8	4.2	0.59	1.0 <=W	1.4	0.2 <T	1.0 <=W	2 <	8	0
"	97/07/08	48617	2.5	1.0	2.5	4.6	0.87	1.0 <T	0.2 <T	0.2 <T	1.0 <=W	2 <	2	0
4	97/06/03	76840	2.0	1.0	2.0	4.0	1.64	1.0 <T	0.8 <T	0.2 <T	1.0 <=W	2 <	2 <	0
"	97/07/08	48616	2.0	1.0	2.0	4.6	0.52	1.0 <T	0.8 <T	0.1 <=W	1.0 <=W	2	10	0
5	97/06/03	76841	9.2	1.0	5.5	4.4	0.65	1.0 <=W	1.4	0.2 <T	1.0 <=W	--	--	—
"	"	76842-DC	9.2	0.0-8.0	5.5	4.6	0.65	2.0 <T	2.0	0.3 <T	2.0 <T	2 <	2 <	0
"	97/07/08	48614-DC	9.0	0.0-8.0	5.5	4.4	0.87	1.0 <T	1.0	0.1 <=W	1.0 <=W	2 <	2 <	0
"	"	48615	9.0	8.0	5.5	4.2	1.00	1.0 <T	--	--	--	--	--	--
6	97/06/03	76844	3.0	1.0	3.0	4.2	0.96	1.0 <=W	1.2	0.2 <T	1.0 <=W	2 <	2 <	0
"	97/07/08	48613	3.0	1.0	3.0	5.2	0.70 S24	1.0 <T	0.8 <T	0.2 <T	1.0 <=W	2	2 <	0
7	97/06/03	76845	2.2	1.0	2.2	3.8	0.64	1.0 <=W	0.6 <T	0.1 <=W	1.0 <=W	2 <	2 <	0
"	97/07/08	48612	2.2	1.0	2.2	4.4	1.04	1.5 <T	1.0	0.2 <T	1.0 <=W	2 <	2 <	0
8	97/06/03	76848	1.3	0.9	1.3	3.8	0.92	1.0 <=W	1.2	0.2 <T	1.0 <=W	2 <	2 <	0
"	97/07/07	48607	1.4	1.0	1.4	4.2	0.78	1.0 <T	0.4 <T	0.1 <=W	1.0 <=W	2 <	2 <	0
9	97/06/03	76849	2.0	1.0	2.0	3.6	0.80	1.0 <=W	1.4	0.2 <T	1.0 <=W	2 <	2 <	0
"	97/07/07	48606	2.2	1.0	2.2	4.2	0.73	1.0 <T	1.2	0.2 <T	1.0 <=W	2 <	2 <	0
10	97/06/03	76850	1.7	1.0	1.7	4.0	0.62	1.0 <=W	0.6 <T	0.1 <=W	1.0 <=W	2 <	2	0
"	97/07/07	48605	1.6	1.0	1.6	3.6	0.67	1.0 <T	1.2	0.1 <=W	1.0 <=W	2 <	2 <	0
11	97/06/03	76851	1.9	1.0	1.9	3.8	1.12	1.0 <=W	0.8 <T	0.2 <T	1.0 <=W	2 <	2 <	0
"	97/07/07	48604	1.9	1.0	1.9	4.0	0.73	1.0 <T	0.6 <T	0.1 <=W	1.0 <=W	2 <	2	0
12	97/06/03	76852	1.5	1.0	1.5	4.2	0.91	1.0 <=W	1.2	0.2 <T	1.0 <=W	2 <	2 <	0
"	97/07/07	48602	1.4	1.0	1.4	3.4	0.95	1.0 <T	0.6 <T	0.2 <T	1.0 <=W	2 <	2	0
13	97/06/03	76853	1.7	1.0	1.7	4.2	0.93	3.0 <T	2.0	0.4 <T	2.0 <T	2 <	2 <	0
"	97/07/07	48603	1.7	1.0	1.7	3.6	0.77	1.0 <T	0.6 <T	0.1 <=W	1.0 <=W	2 <	2 <	0
14	97/06/03	76854	3.0	1.0	3.0	4.0	0.93	2.0 <T	2.0	0.3 <T	1.0 <=W	2 <	2	0
"	97/07/08	48608-R	2.9	1.0	2.9	4.2	0.49	1.0 <T	0.6 <T	0.1 <=W	1.0 <=W	2 <	4	0
"	"	48609-R	2.9	1.0	2.9	4.6	0.52	1.0 <T	0.6 <T	0.2 <T	1.0 <=W	2 <	2	0
15	97/06/03	76855-DC	9.7	0.0-9.0	5.0	4.2	0.87	2.0 <T	2.4	0.4 <T	2.0 <T	2 <	2 <	0
"	97/07/08	48610-DC	9.6	0.0-8.5	5.0	3.8	0.89	1.0 <T	1.6	0.2 <T	1.0 <=W	2	2	0
	97/06/03	76856	1.5	1.0	1.5	4.4	0.77 S24	1.0 <=W	1.0	0.2 <T	1.0 <=W	2 <	2 <	0
"	97/07/08	48611	1.3	1.0	1.3	4.4	0.49	0.5 <T	0.8 <T	0.2 <T	1.0 <=W	2 <	2 <	0
17	97/06/03	76857-R	7.0	1.0	5.0	4.0	0.67	1.0 <=W	1.6	0.2 <T	1.0 <=W	2 <	2 <	0
"	"	76858-R	7.1	1.0	5.0	4.2	0.75	1.0 <=W	1.4	0.2 <T	1.0 <=W	2 <	2 <	0
"	97/07/08	48624	7.0	1.0	5.0	4.4	1.13	1.5 <T	1.2	0.2 <T	1.0 <=W	2 <	2	0
18	97/06/03	76859	1.2	1.0	1.2	6.0	1.03	2.0 <T	1.6	0.2 <T	1.0 <=W	2 <	2 <	0
"	97/07/08	48622-R	1.3	1.0	1.3	7.8	0.70	1.0 <T	1.0	0.2 <T	1.0 <=W	2 <	4	0
"	"	48623-R	1.3	1.0	1.3	8.2	0.61	1.0 <T	1.0	0.2 <T	1.0 <=W	2 <	40	0
19	97/06/03	76860	1.7	1.0	1.7	4.8	0.55	1.0 <=W	0.6 <T	0.2 <T	1.0 <=W	2 <	2 <	0
"	97/07/08	48621	1.8	1.0	1.8	4.4	0.46	0.5 <T	0.8 <T	0.1 <=W	1.0 <=W	2	2 <	0
20	97/06/03	76843	2.1	1.0	2.1	4.4	0.65	1.0 <=W	1.6	0.2 <T	1.0 <=W	2 <	2 <	0
"	97/07/08	48620	2.0	1.0	2.0	4.8	0.54	0.5 <T	0.4 <T	0.1 <=W	1.0 <=W	2 <	2 <	0
21	97/06/03	76846-R	2.5	1.0	2.5	3.6	0.74	1.0 <=W	1.8	0.4 <T	1.0 <=W	2 <	2 <	0

Table D-4. Physical factors, chlorophyll and bacterial concentrations in Lake Couchiching water samples in June and July 1997.

Concentration units as noted: mg/l = ppm; ug/l = ppb; counts/dl = counts/100 ml; TCU = total colourimetric units; FTU = Formazin colourimetric units.

Station Number	Sample Date	Field Sample Number	Water Depth, m	Sample Depth, m	Secchi Depth, m	Colour, true TCU	Turbidity FTU	Suspended Solids, mg/l	Chlorophyll a, total ug/l	Chlorophyll b, total ug/l	Chlorophyll a, corrected ug/l	*Escherichia coli* counts/dl	Fecal *Streptococcus* counts/dl	*Pseudomonas aeruginosa* counts/dl
"	"	76847-R	2.5	1.0	2.5	3.4	0.90	1.0 <=W	1.8	0.3 <T	1.0 <=W	2 <	2 <	0
"	97/07/07	48601	2.2	1.0	2.2	3.8	1.37	1.0 <T	0.8 <T	0.2 <T	1.0 <=W	2 <	8	0
19	97/06/03	76861-SB	--	--	--	0.6 <T	0.08 <T	1.0 <=W	0.2 <=W	0.2 <T	1.0 <=W	--	--	--
"	"	76862-TB	--	--	--	0.4 <T	0.02 <T	1.0 <=W	--	--	--	--	--	--
17	97/07/08	48625-SB	--	--	--	0.2 <=W	0.11 <T	0.5 <=W	0.2 <=W	0.1 <=W	--	--	--	--
"	"	48626-TB	--	--	--	0.2 <=W	0.02 <T	0.5 <=W	--	--	--	--	--	--
PWQO			--	--	--	--	--	--	--	--	--	100	--	--

NOTES " < " = actual result is less than the reported value

" <T " = a measurable trace amount interpret with caution

" <=W " = no measurable response (zero), less than reported value

" -R " = field temporal replicate

" -DC " = Depth Composite (bacteria sample taken at 1 metre depth)

" -SB " = System Blank

" -TB " = Travel Blank

" S24 " = Sample settled 20-40 % during 1 minute test period

Table D-5. Inorganics and heavy metals concentrations in Lake Couchiching water samples.
All concentration in ug/l (ppb).

Station Number	Sample Date	Field Sample Number	Sample Depth, m	Aluminum	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Iron	Lead	Manganese
1	97/06/03	76837	1.0	4.99 +/-1.10	0.5 <=W	28.9 +/-0.68	0.0591 +/-0.0370	0.0150 +/-0.0230	0.474 +/-0.270	0.0920 +/-0.0055	0.511 +/-0.110	15.0 +/-5.20	0.0927 +/-0.1400	4.16
"	97/07/08	48619	1.0	5.86 +/-0.57	0.5 <=W	32.4 +/-1.12	0.0052 +/-0.0066	-0.0078 +/-0.0206	1.90 +/-0.16	0.0513 +/-0.0153	0.452 +/-0.100	4.25 +/-2.43	0.0594 +/-0.1116	5.14
2	97/06/03	76838	1.0	5.14 +/-0.51	0.5 <=W	29.0 +/-0.75	0.0538 +/-0.0520	-0.0028 +/-0.0250	0.224 +/-0.082	0.0752 +/-0.0170	0.463 +/-0.100	9.41 +/-5.70	0.1690 +/-0.2200	2.84
"	97/07/08	48618	1.0	6.01 +/-0.49	0.5 <=W	34.7 +/-0.95	0.0290 +/-0.0205	-0.0023 +/-0.0213	2.46 +/-0.29	0.0148 +/-0.0175	0.339 +/-0.085	3.69 +/-2.35	0.0415 +/-0.0980	5.14
3	97/06/03	76839	1.0	4.83 +/-0.42	0.5 <=W	29.0 +/-1.60	0.0758 +/-0.0170	0.0280 +/-0.0320	0.267 +/-0.055	0.0683 +/-0.0180	0.532 +/-0.064	10.3 +/-7.10	0.2430 +/-0.1500	2.60
"	97/07/08	48617	1.0	7.49 +/-1.47	0.5 <=W	34.6 +/-1.20	0.0177 +/-0.0154	-0.0076 +/-0.0081	4.75 +/-0.27	0.0394 +/-0.0088	0.491 +/-0.084	4.16 +/-2.54	-0.0028 +/-0.1545	5.08
4	97/06/03	76840	1.0	11.7 +/-1.70	0.5 <=W	29.7 +/-0.88	0.0481 +/-0.0160	0.0450 +/-0.0260	0.731 +/-0.200	0.1740 +/-0.0150	1.29 +/-0.097	19.9 +/-5.00	0.5480 +/-0.1600	3.30
"	97/07/08	48616	1.0	6.08 +/-0.51	0.5 <=W	35.4 +/-0.77	0.0119 +/-0.0197	-0.0087 +/-0.0165	4.88 +/-0.29	0.0133 +/-0.0088	0.360 +/-0.074	1.77 +/-2.35	-0.0513 +/-0.0969	4.60
5	97/06/03	76841	1.0	5.07 +/-0.45	0.5 <=W	29.5 +/-0.83	0.0381 +/-0.0210	0.0184 +/-0.0450	0.297 +/-0.074	0.0429 +/-0.0170	0.492 +/-0.130	8.85 +/-8.20	0.1050 +/-0.1400	1.95
"	"	76842-DC	0.0-8.0	5.27 +/-0.63	0.5 <=W	30.3 +/-1.50	0.1120 +/-0.0850	0.0138 +/-0.0350	0.274 +/-0.110	0.0554 +/-0.0130	0.507 +/-0.062	9.53 +/-5.90	0.1640 +/-0.2000	2.51
"	97/07/08	48614-DC	0.0-8.0	7.55 +/-0.92	0.5 <=W	33.4 +/-0.91	0.0027 +/-0.0158	0.0046 +/-0.0167	4.69 +/-0.399	0.0221 +/-0.0072	0.440 +/-0.083	2.85 +/-2.49	0.0310 +/-0.1180	4.18
"	"	48615	8.0	8.05 +/-0.67	0.5 <=W	34.2 +/-1.04	0.0110 +/-0.0224	0.0071 +/-0.0248	3.96 +/-0.336	0.0189 +/-0.0082	0.393 +/-0.096	3.70 +/-2.99	0.1290 +/-0.2123	4.24
6	97/06/03	76844	1.0	5.63 +/-0.73	0.5 <=W	28.9 +/-1.20	0.0841 +/-0.0500	0.1180 +/-0.0330	0.243 +/-0.060	0.0713 +/-0.0190	0.502 +/-0.100	9.97 +/-5.90	0.2080 +/-0.2300	2.18
"	97/07/08	48613	1.0	5.73 +/-0.47	0.5 <=W	34.4 +/-0.79	-0.0002 +/-0.0119	0.0118 +/-0.0202	3.72 +/-0.332	0.0112 +/-0.0105	0.400 +/-0.084	1.86 +/-2.49	0.0451 +/-0.1172	4.15
7	97/06/03	76845	1.0	4.81 +/-0.45	0.5 <=W	30.0 +/-1.00	0.1240 +/-0.0630	0.1600 +/-0.0220	0.465 +/-0.089	0.0787 +/-0.0190	0.753 +/-0.130	9.98 +/-7.40	0.3690 +/-0.2400	1.23
"	97/07/08	48612	1.0	8.20 +/-0.67	0.5 <=W	32.3 +/-1.04	0.0073 +/-0.0029	0.0034 +/-0.0141	3.78 +/-0.407	0.0153 +/-0.0089	0.416 +/-0.084	4.44 +/-2.47	0.0112 +/-0.1190	3.94
8	97/06/03	76848	0.9	9.59 +/-0.94	0.5 <=W	29.5 +/-1.25	0.0087 +/-0.0078	0.0090 +/-0.0187	0.358 +/-0.088	0.0387 +/-0.0071	0.350 +/-0.052	12.3 +/-2.71	0.8440 +/-0.2428	2.29
"	97/07/07	48607	1.0	8.17 +/-0.76	0.5 <=W	26.8 +/-2.25	0.0384 +/-0.0432	0.0012 +/-0.0116	4.04 +/-0.57	0.0289 +/-0.0136	0.306 +/-0.115	11.3 +/-9.42	0.1280 +/-0.1047	3.71
9	97/06/03	76849	1.0	4.94 +/-0.41	0.5 <=W	29.8 +/-0.71	0.0317 +/-0.0092	-0.0002 +/-0.0166	3.16 +/-0.28	0.0191 +/-0.0108	0.360 +/-0.051	6.63 +/-2.43	-0.0734 +/-0.0813	1.50
"	97/07/07	48606	1.0	22.7 +/-28.7	0.5 <=W	42.4 +/-17.2	0.2710 +/-0.4389	0.0282 +/-0.0553	***20.0*** +/-26.8	-0.0189 +/-0.0161	0.735 +/-0.312	45.1 +/-69.99	0.6460 +/-0.6479	7.23
10	97/06/03	76850	1.0	4.46 +/-0.45	0.5 <=W	29.4 +/-0.63	0.0177 +/-0.0068	0.0100 +/-0.0170	1.10 +/-0.13	0.0356 +/-0.0218	0.300 +/-0.035	6.12 +/-2.43	0.1290 +/-0.0550	1.61
"	97/07/07	48605	1.0	6.50 +/-0.79	0.5 <=W	29.6 +/-1.29	0.0296 +/-0.0204	-0.0060 +/-0.0274	4.95 +/-1.18	-0.0014 +/-0.0048	0.307 +/-0.094	5.01 +/-6.57	0.1100 +/-0.1223	1.82
11	97/06/03	76851	1.0	5.84 +/-0.49	0.5 <=W	29.5 +/-1.06	0.0361 +/-0.0078	-0.0068 +/-0.0228	3.30 +/-0.34	0.0380 +/-0.0070	0.358 +/-0.053	8.17 +/-2.79	-0.1130 +/-0.0473	1.53
"	97/07/07	48604	1.0	7.69 +/-1.71	0.5 <=W	28.8 +/-0.82	0.0253 +/-0.0197	0.0093 +/-0.0216	4.68 +/-0.28	0.0192 +/-0.0177	0.802 +/-0.066	4.22 +/-2.92	0.1980 +/-0.0497	2.45
12	97/06/03	76852	1.0	5.85 +/-0.61	0.5 <=W	29.6 +/-0.70	0.0353 +/-0.0188	0.0013 +/-0.0205	4.07 +/-0.25	0.0536 +/-0.0080	0.463 +/-0.058	7.38 +/-3.86	-0.0208 +/-0.0791	1.56
"	97/07/07	48602	1.0	8.54 +/-0.74	0.5 <=W	29.4 +/-0.99	0.0323 +/-0.0067	-0.0017 +/-0.0172	4.30 +/-0.38	0.0099 +/-0.0056	0.249 +/-0.024	4.59 +/-2.82	-0.1530 +/-0.0523	1.98
13	97/06/03	76853	1.0	4.94 +/-0.41	0.5 <=W	28.9 +/-1.42	0.0319 +/-0.0142	-0.0083 +/-0.0211	3.63 +/-0.21	0.0368 +/-0.0076	0.402 +/-0.041	4.54 +/-2.52	-0.0307 +/-0.0817	1.51
"	97/07/07	48603	1.0	6.42 +/-0.62	0.5 <=W	29.7 +/-0.75	0.0389 +/-0.0097	0.0072 +/-0.0298	4.49 +/-0.35	0.0322 +/-0.0096	0.365 +/-0.024	3.39 +/-2.84	-0.0659 +/-0.0770	2.39
14	97/06/03	76854	1.0	6.77 +/-0.62	0.5 <=W	29.6 +/-0.91	0.0353 +/-0.0166	-0.0012 +/-0.0197	3.48 +/-0.30	0.0497 +/-0.0070	0.261 +/-0.026	6.83 +/-2.50	-0.1510 +/-0.0526	1.93
"	97/07/08	48608-R	1.0	7.02 +/-0.71	0.5 <=W	30.9 +/-1.51	0.0394 +/-0.0082	0.0163 +/-0.0402	5.49 +/-0.46	0.0059 +/-0.0150	0.427 +/-0.091	2.22 +/-2.31	0.0274 +/_0.1036	2.45
"	"	48609-R	1.0	6.81 +/-0.55	0.5 <=W	31.4 +/-0.67	0.0143 +/-0.0073	0.0362 +/-0.0151	4.83 +/-0.29	0.0541 +/-0.0188	0.816 +/-0.082	2.78 +/-2.37	0.4240 +/-0.1238	3.02
15	97/06/03	76855-DC	0.0-9.0	6.21 +/-0.65	0.5 <=W	29.5 +/-1.02	0.0228 +/-0.0064	0.0041 +/-0.0210	4.53 +/-0.24	0.0396 +/-0.0109	0.331 +/-0.023	6.43 +/-3.50	0.0890 +/-0.0797	1.51
"	97/07/08	48610-DC	0.0-8.5	7.76 +/-0.84	0.5 <=W	32.4 +/-0.75	0.0209 +/-0.0274	0.0177 +/-0.0094	4.50 +/-0.31	0.0116 +/-0.0060	0.491 +/-0.084	2.86 +/-2.53	0.0310 +/-0.1159	2.38
16	97/06/03	76856	1.0	7.78 +/-0.63	0.5 <=W	28.9 +-0.74	0.0261 +/-0.0171	-0.0068 +/-0.0168	2.40 +/-0.21	0.0538 +/-0.0236	0.304 +/-0.019	5.03 +/-2.42	-0.1290 +/-0.0498	4.22
"	97/07/08	48611	1.0	6.28 +/-0.57	0.5 <=W	33.1 +/-1.06	0.0223 +/-0.0201	-0.0024 +/-0.0144	5.71 +/-0.32	0.0304 +/-0.0164	0.592 +/-0.074	2.94 +/-2.41	0.1210 +/-0.1178	3.93
17	97/06/03	76857-R	1.0	4.13 +/-0.38	0.5 <=W	29.5 +/-0.83	0.0173 +/-0.0094	-0.0041 +/-0.0166	1.35 +/-0.11	0.0014 +/-0.0104	0.337 +/-0.030	5.20 +/-2.41	0.5650 +/-0.0969	2.66
"	"	76858-R	1.0	4.54 +/-0.42	0.5 <=W	29.0 +/-0.80	0.0194 +/-0.0187	0.0090 +/-0.0264	0.550 +/-0.161	0.0235 +/-0.0062	0.316 +/-0.019	6.94 +/-3.44	0.2110 +/-0.1092	2.79
"	97/07/08	48624	1.0	9.03 +/-0.74	0.5 <=W	34.4 +/-1.16	0.0079 +/-0.0040	0.0320 +/-0.0270	4.30 +/-0.31	0.0126 +/-0.0088	0.897 +/-0.084	7.05 +/-2.43	2.660 +/-0.309	4.85
18	97/06/03	76859	1.0	6.89 +/-0.58	0.5 <=W	30.1 +/-0.82	0.0107 +/-0.0171	-0.0024 +/-0.0198	0.300 +/-0.094	0.0680 +/-0.0185	0.462 +/-0.026	15.1 +/-2.88	0.0476 +/-0.0704	7.54
"	97/07/08	48622-R	1.0	17.2 +/-1.65	0.5 <=W	29.2 +/-0.95	0.0074 +/-0.0200	0.0006 +/-0.0113	3.53 +/-0.24	0.0301 +/-0.0206	0.455 +/-0.098	13.6 +/-2.72	-0.0690 +/-0.1399	3.29
"	"	48623-R	1.0	12.1 +/-0.98	0.5 <=W	30.0 +/-1.21	0.0216 +/-0.0124	-0.0021 +/-0.0156	5.21 +/-0.35	0.0606 +/-0.0088	0.558 +/-0.091	10.1 +/-2.58	1.6400 +/-0.2127	3.36
19	97/06/03	76860	1.0	6.25 +/-0.52	0.5 <=W	31.4 +/-0.70	0.0156 +/-0.0143	-0.0045 +/-0.0172	0.835 +/-0.11	0.0081 +/-0.0147	0.290 +/-0.018	4.93 +/-2.74	-0.1490 +/-0.0601	2.40
"	97/07/08	48621	1.0	5.89 +/-0.55	0.5 <=W	31.0 +/-0.89	0.0315 +/-0.0302	0.0037 +/-0.0194	4.05 +/-0.30	-0.0073 +/-0.0117	0.459 +/-0.074	2.28 +/-2.50	0.1600 +/-0.1067	3.29
20	97/06/03	76843	1.0	7.31 +/-0.71	0.5 <=W	28.8 +/-0.58	0.0785 +/-0.0310	0.0038 +/-0.0230	0.336 +/-0.120	0.0614 +/-0.0084	0.566 +/-0.130	11.9 +/-6.90	0.2270 +/-0.2000	2.80
"	97/07/08	48620	1.0	10.3 +/-1.09	0.5 <=W	32.7 +/-0.83	0.0138 +/-0.0231	0.0194 +/-0.0116	2.91 +/-0.26	0.0300 +/-0.0080	0.365 +/-0.079	5.89 +/-2.37	0.7450 +/-0.1068	6.13
21	97/06/03	76846-R	1.0	5.34 +/-0.78	0.5 <=W	29.3 +/-0.75	0.0525 +/-0.0360	-0.0081 +/-0.0230	0.262 +/-0.086	0.0739 +/-0.0110	0.507 +/-0.110	10.9 +/-5.80	0.1650 +/-0.2000	1.76

Table D-5. Inorganics and heavy metals concentrations in Lake Couchiching water samples.
All concentration in ug/l (ppb).

Station Number	Sample Date	Field Sample Number	Sample Depth, m	Aluminum	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Iron	Lead	Manganese
"	"	76847-R	1 0	6 25 +/-0 98	0 5 <=W	29 8 +/-1 10	0 0484 +/-0 0450	0 0064 +/-0 0240	0 283 +/-0 140	0 0633 +/-0 0160	0 399 +/-0 093	10 8 +/_4 80	0 2500 +/-0 1800	1 84
"	97/07/07	48601	1 0	6 67 +/-0 57	0 5 <=W	31 1 +/-0 64	0 0379 +/-0 0093	-0 0003 +/-0 0222	4 63 +/-0 47	0 0132 +/-0 0097	0 124 +/-0 047	3 15 +/-2 46	-0 1690 +/-0 0668	3 16
Mean & Std. Dev'n ,	97/06/03			6 02 +/-1 73	0 5 <=W	29 5 +/-0 6	0.0451 +/-0 0307	0 0165 +/-0 0402	1 37 +/-1 47	0 0551 +/-0 0340	0.461 +/-0 210	9 26 +/-3 73	0 1566 +/-0 2423	2 53
Mean & Std. Dev'n ,	97/07/07-08			8 50 +/-3 91	0 5 <=W	32 3 +/-3 1	0 0307 +/-0 0526	0 0067 +/-0 0126	4 91 +/-3 34	0 0207 +/-0.0187	0 468 +/-0 186	6 38 +/-8 78	0 2582 +/-0 6263	3 83
19	97/06/03	76861-SB		3 69 +/-0 32	0 5 <=W	0 668 +/-0 036	0 0117 +/-0 0061	0 0090 +/-0 0237	0.185 +/-0 079	0 0502 +/-0 0086	4 61 +/-0 234	2 34 +/-2 78	-0 0696 +/-0710	0 252
"	"	76862-TB		0 938 +/-0 122	0 5 <=W	0 298 +/-0 012	0 0249 +/-0 0185	-0 0169 +/-0 0188	0 075 +/-0 081	0 0703 +/-0 0076	-0 136 +/-0 024	1 07 +/-2 91	-0 2790 +/-0 0822	0 094
17	97/07/08	48625-SB		1 01 +/-0 13	0 5 <=W	0 721 +/-0 021	-0 0042 +/-0 0052	0 0297 +/-0 0271	0 266 +/-0 115	0 0556 +/-0 0092	0 425 +/-0 092	3 03 +/-2 64	0 3730 +/-0 1403	0 346
"	"	48626-TB		0 751 +/-0 081	0 5 <=W	0 916 +/-0 044	0 0070 +/-0 0159	0 0627 +/-0 0165	0 118 +/-0 101	0 0815 +/-0 0056	0.580 +/-0 079	0 373 +/-2 319	0 0377 +/-0 1919	0 244
PWQO				75	100	--	1100	0 2	1 0 (CrVI) 8 9 (CrIII)	0 9	5	300	5	--

NOTES " +/- " = 95 % Confidence Limits, unless otherwise specified
" <=W " = no measurable response (zero) less than reported value
" -R " = field temporal replicate
" -DC " = Depth Composite
" -SB " = System Blank
" - TB " = Travel Blank
italicized and bolded values exceed PWQO for the protection of aquatic life

Table D-5. Inorganics and heavy metals concentrations in Lake Couchiching water samples.
All concentration in ug/l (ppb).

Station Number	Sample Date	Field Sample Number	Sample Depth, m	Mercury	Molybdenum	Nickel	Strontium	Titanium	Vanadium	Zinc
1	97/06/03	76837	1 0 +/-0 72	0 02 <=W	0.503 +/-0 087	-0 0976 +/-0 2800	156 +/-8 5	8 92 +/-1 80	0 439 =/-0 043	1.160 +/-0 180
"	97/07/08	48619	1 0 +/-0 18	0 02 <=W	0 452 +/-0 024	-0 0839 +/-0 0289	142 +/-7 5	9 32 +/-0 78	0 586 +/-0 032	0 976 +/-0 182
2	97/06/03	76838	1 0 +/-0 22	0 02 <=W	0 488 +/-0 062	0 2870 +/-0 2200	146 +/-9 0	8 98 +/-0 77	0 411 +/-0 072	1 180 +/-0 300
"	97/07/08	48618	1 0 +/-0.14	0 02 <=W	0 477 +/-0 026	-0.0239 +/-0 0872	142 +/-7 6	10 1 +/-0 69	0 629 +/-0 041	0 512 +/-0 164
3	97/06/03	76839	1 0 +/-0 07	0 02 <=W	0 485 +/-0 025	0 1350 +/-0 2100	144 +/-7 2	8 30 +/-0 57	0 407 +/-0 050	1 160 +/-0 240
"	97/07/08	48617	1 0 +/-0 20	0 02 <=W	0 427 +/-0 036	-0 0750 +/-0.0554	147 +/-9 1	9 63 +/-0 70	0 632 +/-0 037	1 700 +/-0 207
4	97/06/03	76840	1 0 +/-0 38	0 02 <=W	0 592 +/-0 076	0 4740 +/-0 1200	154 +/-9 2	9 50 +/-1 20	0 463 +/-0 027	4 380 +/-0 480
"	97/07/08	48616	1.0 +/-0 12	0 02 <=W	0 396 +/-0 023	0 1280 +/-0 2197	143 +/-7 7	9 67 +/-0 73	0 655 +/-0 043	0 547 +/-0 159
5	97/06/03	76841	1 0 +/-0 09	0 02 <=W	0 531 +/-0 036	-0 0262 +/-0 2500	159 +/-8 4	9 04 +/-0 61	0 401 +/-0 072	1 920 +/-0 410
"	"	76842-DC	0 0-8 0 +/-0 18	0 02 <=W	0 491 +/-0 037	0 1420 +/-0 1700	154 +/-12 0	8 84 +/-0 92	0 468 +/-0 096	1 360 +/-0 370
"	97/07/08	48614-DC	0.0-8 0 +/-0 17	0 02 <=W	0.413 +/-0 025	0 1370 +/-0 1402	145 +/-7 5	9 17 +/-0 64	0 650 +/-0 043	0 845 +/-0 180
"	"	48615	8 0 +/-0 21	0 02 <=W	0 424 +/-0 034	0 1730 +/-0 1039	143 +/-7 7	9 54 +/-0 66	0 667 +/-0 061	1 080 +/-0 222
6	97/06/03	76844	1 0 +/-0 23	0 02 <=W	0 429 +/-0 051	0 0709 +/-0 1200	146 +/-8 0	8 90 +/-0 70	0 432 +/-0 062	1 500 +/-0 310
"	97/07/08	48613	1 0 +/-0 13	0 02 <=W	0 449 +/-0 053	0 0058 +/-0 1056	145 +/-10 2	8 71 +/-0 59	0 658 +/-0 038	0 626 +/-0 171
7	97/06/03	76845	1 0 +/-0 09	0 02 <=W	0 460 +/-0 026	0 1630 +/-0 180	147 +/-9 0	8 40 +/-0 64	0 457 +/-0 027	2.170 +/-0 210
"	97/07/08	48612	1.0 +/-0 10	0 02 <=W	0 443 +/-0 028	-0 0488 +/-0 1169	146 +/-7 4	8 66 +/-0 60	0 640 +/-0 039	0 794 +/-0 170
8	97/06/03	76848	0 9 +/-0 07	0.02 <=W	0 518 +/-0.062	-0 3070 +/-0 1236	140 +/-10 7	7 22 +/-0 55	0 449 +/-0 045	1 080 +/-0 158
"	97/07/07	48607	1 0 +/-0 14	0 02 <=W	0 532 +/-0 108	-0 4810 +/-0 3109	144 +/-16 9	6 47 +/-0 52	0 671 +/-0 070	0 572 +/-0 236
9	97/06/03	76849	1 0 +/-0 04	0 02 <=W	0 482 +/-0 031	-0 3070 +/-0.1038	143 +/-8 9	7 02 +/-0 47	0 456 +/-0 025	1 080 +/-0 182
"	97/07/07	48606	1 0 +/-9 38	0 02 <=W	0 637 +/-0 137	-0 9390 +/-0 6437	190 +/-40 0	24 4 +/-29 8	1 920 +/-2 339	0 621 +/-0 353
10	97/06/03	76850	1 0 +/-0 08	0 02 <=W	0 495 +/-0 028	-0 2670 +/-0 1165	142 +/-8 3	7 21 +/-0.45	0 459 +/-0 039	1 410 +/-0 176
"	97/07/07	48605	1 0 +/-0 17	0 02 <=W	0 533 +/-0 029	-0 4870 +/-0 0974	139 +/-8 3	7 43 +/-0 75	0 553 +/-0 081	0 451 +/-0 258
11	97/06/03	76851	1.0 +/-0 06	0 02 <=W	0 467 +/-0 027	-0 3180 +/-0 0593	142 +/-7 6	6 75 +/-0 43	0 455 +/-0 024	2 070 +/-0 182
"	97/07/07	48604	1 0 +/-0.18	0 02 <=W	0 429 +/-0 024	-0 3320 +/-0 0837	138 +/-6 9	8 37 +/-1 07	0 604 +/-0 045	0 862 +/-0 168
12	97/06/03	76852	1 0 +/-0 13	0 02 <=W	0 466 +/-0 029	-0 2790 +/-0 2443	141 +/-7 5	7.53 +/-0 87	0 495 +/-0 047	5 110 +/-0 432
"	97/07/07	48602	1 0 +/-0 05	0 02 <=W	0 432 +/-0 024	-0 2860 +/-0.0851	136 +/-6 9	7 04 +/-0 44	0 656 +/-0 041	0 245 +/-0 096
13	97/06/03	76853	1 0 =/-0 05	0 02 <=W	0 449 +/-0 039	-0 2130 +/-0 1412	140 +/-7 6	7 18 +/-0 47	0 471 +/-0 028	1 890 +/-0 231
"	97/07/07	48603	1.0 +/-0 07	0 02 <=W	0 400 +/-0 031	-0 3410 +/-0 2067	136 +/-6 8	7 13 +/-0 51	0 619 +/-0 035	0 899 +/-0 108
14	97/06/03	76854	1 0 +/-0 06	0 02 <=W	0 453 +/-0 027	-0 2140 +/-0 2750	138 +/-7 1	7 30 +/-0 55	0 469 +/-0 026	3 520 +/-0 316
"	97/07/08	48608-R	1 0 +/-0 12	0 02 <=W	0 492 +/-0 047	-0 1620 +/-0 1091	141 +/-7 6	8 33 +/-0 78	0 630 +/-0 059	0 657 +/-0 159
"	"	48609-R	1 0 +/-0 09	0 02 <=W	0 487 +/-0.050	0 3190 +/-0 0652	142 +/-7 9	8 09 +/-0 55	0 645 +/-0 033	2 860 +/-0 303
15	97/06/03	76855-DC	0 0-9 0 +/-0 11	0 02 <=W	0 427 +/-0 033	-0 3060 +/-0 0674	139 +/-7 8	7 30 +/-0 88	0 483 +/-0 034	9 750 +/-0 851
"	97/07/08	48610-DC	0 0-8 5 +/-0 09	0 02 <=W	0 454 +/-0 033	-0 0451 +/-0 2060	140 +/-7.1	8 66 +/-0 60	0 599 +/-0 050	1 070 +/-0 208
16	97/06/03	76856	1 0 +/-0 20	0 02 <=W	0 439 +/-0 042	-0 1200 +/-0 1874	143 +/-7 9	7 46 +/-0 64	0 495 +/-0 032	19 20 +/-1 612
"	97/07/08	48611	1 0 +/-0 20	0 02 <=W	0 438 +/-0 027	-0 0666 +/-0 1169	141 +/-7 6	8 55 +/-0.62	0 666 +/-0 035	0 641 +/-0 169
17	97/06/03	76857-R	1 0 +/-0 06	0 02 <=W	0 420 +/-0 023	-0 1510 +/-0 0652	139 +/-7 6	7 25 +/-0 48	0 485 +/-0 037	0 598 +/-0 103
"	"	76858-R	1 0 +/-0 11	0 02 <=W	0.503 +/-0 028	-0 1930 +/-0 1564	144 +/-8 8	7 27 +/-0 56	0 470 +/-0 032	3 910 +/-0 359
"	97/07/08	48624	1 0 +/-0 12	0 02 <=W	0 443 +/-0 024	-0 1860 +/-0 1127	143 +/-9 2	9 92 +/-1 01	0 683 +/-0.049	2 530 +/-0 267
18	97/06/03	76859	1 0 +/-0 16	0 02 <=W	0 484 +/-0 033	-0 1990 +/-0 2969	143 +/-8 2	7 54 +/-0 54	0.559 +/-0 034	1 990 +/-0 268
"	97/07/08	48622-R	1 0 +/-0 15	0 02 <=W	0 413 +/-0 054	0 1070 +/-0 3161	148 +/-7 6	9 46 +/-0.58	0 728 +/-0 055	0 941 +/-0 183
"	"	48623-R	1 0 +/-0 09	0 02 <=W	0 461 +/-0 063	-0 1220 +/-0 0531	150 +/-8 0	9 66 +/-0 60	0 699 +/-0 051	3 540 +/-0.343
19	97/06/03	76860	1 0 +/-0 06	0.02 <=W	0 462 +/-0.028	-0 3310 +/-0 0332	140 +/-7 3	7.79 +/-0 49	0.555 +/-0 041	1 010 +/-0 134
"	97/07/08	48621	1 0 +/-0 10	0 02 <=W	0 445 +/-0 031	-0 1960 +/-0 1888	145 +/-7 9	9 46 +/-0 69	0 601 +/-0 037	1 300 +/-0 262
20	97/06/03	76843	1 0 +/-0 08	0 02 <=W	0 475 +/-0.055	-0 0311 +/-0 0730	156 +/-9 1	9 06 +/-0 62	0 489 +/-0 082	1 450 +/-0 200
"	97/07/08	48620	1 0 +/-0 16	0 02 <=W	0 447 +/-0 026	-0 0731 +/-0 1679	140 +/-7 4	9 10 +/-0 75	0 633 +/-0 037	1 000 +/-0 182
21	97/06/03	76846-R	1 0 +/-0 10	0 02 <=W	0 438 +/-0 023	0 1240 +/-0 210	151 +/-14 0	8 97 +/-0 65	0 422 +/-0 049	1 140 +/-0 300

Table D-5. Inorganics and heavy metals concentrations in Lake Couchiching water samples.
All concentration in ug/l (ppb).

Station Number	Sample Date	Field Sample Number	Sample Depth, m		Mercury	Molybdenum		Nickel		Strontium		Titanium		Vanadium		Zinc	
"	"	76847-R	1 0	+/-0 31	*0.25*	0 435	+/-0 035	0 3990	+/-0 150	145	+/-8 7	9 02	+/-1 60	0 424	+/-0 058	1 630	+/-0 360
"	97/07/07	48601	1 0	+/-0 11	0.02 <=W	0 427	+/-0 024	-0 2240	+/-0 114	139	+/-7 2	7.50	+/-0.54	0 577	+/-0 038	0 200	+/-0 107
Mean & Std Dev'n ,	97/06/03			+/-1 32	0 02 <=W	0 475	+/-0 039	-0 0652	+/-0 2385	146	+/-6.2	8 03	+/-0 87	0.463	+/-0 040	3 011	+/-3 961
Mean & Std. Dev'n.,	97/07/07-08			+/-1 34	0 02 <=W	0 456	+/-0 052	-0 1376	+/-0 2616	144	+/-10 3	9 35	+/-3 36	0 692	+/-0 265	1 061	+/-0 821
19	97/06/03	76861-SB		+/-0 033	0 02 <=W	0 0284	+/-0 0131	0 0853	+/-0 0724	2 54	+/-0 13	0 249	+/-0 064	0 0414	+/-0 0099	5 750	+/-0 551
"	"	76862-TB		+/-0.025	0 02 <=W	0 0220	+/-0 0117	0 0075	+/-0 0364	0 375	+/-0 020	0 067	+/-0 058	0 0188	+/-0 0040	-0 0167	+/-0 0880
17	97/07/08	48625-SB		+/-0 041	0 02 <=W	0 0178	+/-0 0061	0 2020	+/-0 0570	0 902	+/-0 055	0 299	+/-0 189	0 0271	+/-0 0134	2 930	+/-0 313
"	"	48626-TB		+/-0 042	0 02 <=W	0 0077	+/-0 0068	0 3740	+/-0 0283	1.05	+/-0 091	0 206	+/-0 100	0 0054	+/-0 0107	1 810	+/-0 268
PWQO					0 2	10		25		--		--		6		30	

NOTES " +/- " = 95 % Confidence Limits, unless otherwise specified
" <=W " = no measurable response (zero) less than reported value
" -R " = field temporal replicate
" -DC " = Depth Composite
" -SB " = System Blank
"- TB " = Travel Blank
italicized and bolded values exceed PWQO for the protection of aquatic life

Table D-6. Triazine herbicides concentrations in Lake Couchiching water samples.
All concentrations in ng/l (ppt).

Station Number	Sample Date	Field Sample Number	Alachlor	Ametryne	Atratone	Atrazine	De-ethylated Atrazine	Cyanazine	Metolachlor	Metribuzin	Prometone	Prometryne	Propazine	Simazine	De-ethylated Simazine
1	97/06/03	76837	500 <=W	50 <=W	50 <=W	50 <=W	200 <=W	100 <=W	500 <=W	100 <=W	50 <=W	50 <=W	50 <=W	50 <=W	200 <=W
2	97/06/03	76838	500 <=W	50 <=W	50 <=W	66 <T	200 <=W	100 <=W	500 <=W	100 <=W	50 <=W	50 <=W	50 <=W	50 <=W	200 <=W
3	97/06/03	76839	500 <=W	50 <=W	50 <=W	84 <T	200 <=W	100 <=W	500 <=W	100 <=W	50 <=W	50 <=W	50 <=W	50 <=W	200 <=W
4	97/06/03	76840	500 <=W	50 <=W	50 <=W	96 <T	200 <=W	100 <=W	500 <=W	100 <=W	50 <=W	50 <=W	50 <=W	50 <=W	200 <=W
5	97/06/03	76841	500 <=W	50 <=W	50 <=W	130 <T	200 <=W	100 <=W	500 <=W	100 <=W	50 <=W	50 <=W	50 <=W	50 <=W	200 <=W
"	"	76842-DC	500 <=W	50 <=W	50 <=W	140 <T	200 <=W	100 <=W	500 <=W	100 <=W	50 <=W	50 <=W	50 <=W	50 <=W	200 <=W
6	97/06/03	76844	500 <=W	50 <=W	50 <=W	120 <T	200 <=W	100 <=W	500 <=W	100 <=W	50 <=W	50 <=W	50 <=W	50 <=W	200 <=W
7	97/06/03	76845	500 <=W	50 <=W	50 <=W	110 <T	200 <=W	100 <=W	500 <=W	100 <=W	50 <=W	50 <=W	50 <=W	50 <=W	200 <=W
8	97/06/03	76848	500 <=W	50 <=W	50 <=W	140 <T	200 <=W	100 <=W	500 <=W	100 <=W	50 <=W	50 <=W	50 <=W	50 <=W	200 <=W
9	97/06/03	76849	500 <=W	50 <=W	50 <=W	120 <T	200 <=W	100 <=W	500 <=W	100 <=W	50 <=W	50 <=W	50 <=W	50 <=W	200 <=W
10	97/06/03	76850	500 <=W	50 <=W	50 <=W	120 <T	200 <=W	100 <=W	500 <=W	100 <=W	50 <=W	50 <=W	50 <=W	50 <=W	200 <=W
11	97/06/03	76851	500 <=W	50 <=W	50 <=W	110 <T	200 <=W	100 <=W	500 <=W	100 <=W	50 <=W	50 <=W	50 <=W	50 <=W	200 <=W
12	97/06/03	76852	500 <=W	50 <=W	50 <=W	50 <=W	200 <=W	100 <=W	500 <=W	100 <=W	50 <=W	50 <=W	50 <=W	50 <=W	200 <=W
13	97/06/03	76853	500 <=W	50 <=W	50 <=W	50 <=W	200 <=W	100 <=W	500 <=W	100 <=W	50 <=W	50 <=W	50 <=W	50 <=W	200 <=W
14	97/06/03	76854	500 <=W	50 <=W	50 <=W	50 <=W	200 <=W	100 <=W	500 <=W	100 <=W	50 <=W	50 <=W	50 <=W	50 <=W	200 <=W
15	97/06/03	76855-DC	500 <=W	50 <=W	50 <=W	54 <T	200 <=W	100 <=W	500 <=W	100 <=W	50 <=W	50 <=W	50 <=W	50 <=W	200 <=W
16	97/06/03	76856	500 <=W	50 <=W	50 <=W	50 <=W	200 <=W	100 <=W	500 <=W	100 <=W	50 <=W	50 <=W	50 <=W	50 <=W	200 <=W
17	97/06/03	76857-R	500 <=W	50 <=W	50 <=W	50 <=W	200 <=W	100 <=W	500 <=W	100 <=W	50 <=W	50 <=W	50 <=W	50 <=W	200 <=W
"	"	76858-R	500 <=W	50 <=W	50 <=W	50 <=W	200 <=W	100 <=W	500 <=W	100 <=W	50 <=W	50 <=W	50 <=W	50 <=W	200 <=W
18	97/06/03	76859	500 <=W	50 <=W	50 <=W	50 <=W	200 <=W	100 <=W	500 <=W	100 <=W	50 <=W	50 <=W	50 <=W	50 <=W	200 <=W
19	97/06/03	76860	500 <=W	50 <=W	50 <=W	50 <=W	200 <=W	100 <=W	500 <=W	100 <=W	50 <=W	50 <=W	50 <=W	50 <=W	200 <=W
20	97/06/03	76843	500 <=W	50 <=W	50 <=W	130 <T	200 <=W	100 <=W	500 <=W	100 <=W	50 <=W	50 <=W	50 <=W	50 <=W	200 <=W
21	97/06/03	76846-R	500 <=W	50 <=W	50 <=W	120 <T	200 <=W	100 <=W	500 <=W	100 <=W	50 <=W	50 <=W	50 <=W	50 <=W	200 <=W
"	"	76847-R	500 <=W	50 <=W	50 <=W	110 <T	200 <=W	100 <=W	500 <=W	100 <=W	50 <=W	50 <=W	50 <=W	50 <=W	200 <=W
Mean & Std Dev'n			--	--	--	67 +/-58	--	--	--	--	--	--	--	--	--
19	97/06/03	76861-SB	500 <=W	50 <=W	50 <=W	50 <=W	200 <=W	100 <=W	500 <=W	100 <=W	50 <=W	50 <=W	50 <=W	50 <=W	200 <=W
"	"	76862-TB	500 <=W	50 <=W	50 <=W	50 <=W	200 <=W	100 <=W	500 <=W	100 <=W	50 <=W	50 <=W	50 <=W	50 <=W	200 <=W
IPWQO			--	--	--	--	--	--	3000	--	--	--	--	--	--

NOTES blank or "--" indicates that data is not available for this parameter or sample
"<=W" = no measurable response (zero) less than reported value
"<T" = a measurable trace amount interpret with caution.
" -R " = field temporal replicate
" -DC " = Depth Composite
" -SB " = System Blank
" -TB " = Travel Blank

Table D-7. Phenoxy acid herbicides concentrations in Lake Couchiching water samples.
All concentrations in ng/l (ppt)

Station Number	Sample Date	Field Sample Number	Bromoxynil	Dicamba	Dinoseb	Diclofop-methyl	2,4-D	2,4-DB	2,4-D Propionic Acid	2,4,5-T	Picloram	Silvex
1	97/06/03	76837	50 <=W	50 <=W	20 <=W	100 <=W	100 <=W	200 <=W	100 <=W	50 <=W	100 <=W	20 <=W
2	97/06/03	76838	50 <=W	50 <=W	20 <=W	100 <=W	100 <=W	200 <=W	100 <=W	50 <=W	100 <=W	20 <=W
3	97/06/03	76839	50 <=W	50 <=W	20 <=W	100 <=W	100 <=W	200 <=W	100 <=W	50 <=W	100 <=W	20 <=W
4	97/06/03	76840	50 <=W	50 <=W	20 <=W	100 <=W	100 <=W	200 <=W	100 <=W	50 <=W	100 <=W	20 <=W
5	97/06/03	76841	50 <=W	50 <=W	20 <=W	100 <=W	100 <=W	200 <=W	100 <=W	50 <=W	100 <=W	20 <=W
"	"	76842-DC	50 <=W	50 <=W	20 <=W	100 <=W	100 <=W	200 <=W	100 <=W	50 <=W	100 <=W	20 <=W
6	97/06/03	76844	50 <=W	50 <=W	20 <=W	100 <=W	100 <=W	200 <=W	100 <=W	50 <=W	100 <=W	20 <=W
7	97/06/03	76845	50 <=W	50 <=W	20 <=W	100 <=W	100 <=W	200 <=W	100 <=W	50 <=W	100 <=W	20 <=W
8	97/06/03	76848	50 <=W	50 <=W	20 <=W	100 <=W	100 <=W	200 <=W	100 <=W	50 <=W	100 <=W	20 <=W
9	97/06/03	76849	50 <=W	50 <=W	20 <=W	100 <=W	100 <=W	200 <=W	100 <=W	50 <=W	100 <=W	20 <=W
10	97/06/03	76850	50 <=W	50 <=W	20 <=W	100 <=W	100 <=W	200 <=W	100 <=W	50 <=W	100 <=W	20 <=W
11	97/06/03	76851	50 <=W	50 <=W	20 <=W	100 <=W	100 <=W	200 <=W	100 <=W	50 <=W	100 <=W	20 <=W
12	97/06/03	76852	50 <=W	50 <=W	20 <=W	100 <=W	100 <=W	200 <=W	100 <=W	50 <=W	100 <=W	20 <=W
13	97/06/03	76853	50 <=W	50 <=W	20 <=W	100 <=W	100 <=W	200 <=W	100 <=W	50 <=W	100 <=W	20 <=W
14	97/06/03	76854	50 <=W	50 <=W	20 <=W	100 <=W	100 <=W	200 <=W	100 <=W	50 <=W	100 <=W	20 <=W
15	97/06/03	76855-DC	50 <=W	50 <=W	20 <=W	100 <=W	100 <=W	200 <=W	100 <=W	50 <=W	100 <=W	20 <=W
16	97/06/03	76856	50 <=W	50 <=W	20 <=W	100 <=W	100 <=W	200 <=W	100 <=W	50 <=W	100 <=W	20 <=W
17	97/06/03	76857-R	50 <=W	50 <=W	20 <=W	100 <=W	100 <=W	200 <=W	100 <=W	50 <=W	100 <=W	20 <=W
"	"	76858-R	50 <=W	50 <=W	20 <=W	100 <=W	100 <=W	200 <=W	100 <=W	50 <=W	100 <=W	20 <=W
18	97/06/03	76859	50 <=W	50 <=W	20 <=W	100 <=W	100 <=W	200 <=W	100 <=W	50 <=W	100 <=W	20 <=W
19	97/06/03	76860	50 <=W	50 <=W	20 <=W	100 <=W	100 <=W	200 <=W	100 <=W	50 <=W	100 <=W	20 <=W
20	97/06/03	76843	50 <=W	50 <=W	20 <=W	100 <=W	100 <=W	200 <=W	100 <=W	50 <=W	100 <=W	20 <=W
21	97/06/03	76846-R	50 <=W	50 <=W	20 <=W	100 <=W	100 <=W	200 <=W	100 <=W	50 <=W	100 <=W	20 <=W
"	"	76847-R	50 <=W	50 <=W	20 <=W	100 <=W	100 <=W	200 <=W	100 <=W	50 <=W	100 <=W	20 <=W
19	97/06/03	76861-SB	50 <=W	50 <=W	20 <=W	100 <=W	100 <=W	200 <=W	100 <=W	50 <=W	100 <=W	20 <=W
"	"	76862-TB	50 <=W	50 <=W	20 <=W	100 <=W	100 <=W	200 <=W	100 <=W	50 <=W	100 <=W	20 <=W
PWQO			--	200000	--	--	4000	--	--	--	--	--

NOTES blank or "--" indicates that data is not available for this parameter or sample
" <=W " = no measurable response (zero) less than reported value
" -R " = field temporal replicate
" -DC " = Depth Composite
" -SB " = System Blank
" -TB " = Travel Blank

Table D-7. Phenoxy acid herbicides concentrations in Lake Couchiching water samples.
All concentrations in ng/l (ppt).

Station Number	Sample Date	Field Sample Number	Bromoxynil	Dicamba	Dinoseb	Diclofop-methyl	2,4-D	2,4-DB	2,4-D Propionic Acid	2,4,5-T	Picloram	Silvex
1	97/06/03	76837	50 <=W	50 <=W	20 <=W	100 <=W	100 <=W	200 <=W	100 <=W	50 <=W	100 <=W	20 <=W
2	97/06/03	76838	50 <=W	50 <=W	20 <=W	100 <=W	100 <=W	200 <=W	100 <=W	50 <=W	100 <=W	20 <=W
3	97/06/03	76839	50 <=W	50 <=W	20 <=W	100 <=W	100 <=W	200 <=W	100 <=W	50 <=W	100 <=W	20 <=W
4	97/06/03	76840	50 <=W	50 <=W	20 <=W	100 <=W	100 <=W	200 <=W	100 <=W	50 <=W	100 <=W	20 <=W
5	97/06/03	76841	50 <=W	50 <=W	20 <=W	100 <=W	100 <=W	200 <=W	100 <=W	50 <=W	100 <=W	20 <=W
"	"	76842-DC	50 <=W	50 <=W	20 <=W	100 <=W	100 <=W	200 <=W	100 <=W	50 <=W	100 <=W	20 <=W
6	97/06/03	76844	50 <=W	50 <=W	20 <=W	100 <=W	100 <=W	200 <=W	100 <=W	50 <=W	100 <=W	20 <=W
7	97/06/03	76845	50 <=W	50 <=W	20 <=W	100 <=W	100 <=W	200 <=W	100 <=W	50 <=W	100 <=W	20 <=W
8	97/06/03	76848	50 <=W	50 <=W	20 <=W	100 <=W	100 <=W	200 <=W	100 <=W	50 <=W	100 <=W	20 <=W
9	97/06/03	76849	50 <=W	50 <=W	20 <=W	100 <=W	100 <=W	200 <=W	100 <=W	50 <=W	100 <=W	20 <=W
10	97/06/03	76850	50 <=W	50 <=W	20 <=W	100 <=W	100 <=W	200 <=W	100 <=W	50 <=W	100 <=W	20 <=W
11	97/06/03	76851	50 <=W	50 <=W	20 <=W	100 <=W	100 <=W	200 <=W	100 <=W	50 <=W	100 <=W	20 <=W
12	97/06/03	76852	50 <=W	50 <=W	20 <=W	100 <=W	100 <=W	200 <=W	100 <=W	50 <=W	100 <=W	20 <=W
13	97/06/03	76853	50 <=W	50 <=W	20 <=W	100 <=W	100 <=W	200 <=W	100 <=W	50 <=W	100 <=W	20 <=W
14	97/06/03	76854	50 <=W	50 <=W	20 <=W	100 <=W	100 <=W	200 <=W	100 <=W	50 <=W	100 <=W	20 <=W
15	97/06/03	76855-DC	50 <=W	50 <=W	20 <=W	100 <=W	100 <=W	200 <=W	100 <=W	50 <=W	100 <=W	20 <=W
16	97/06/03	76856	50 <=W	50 <=W	20 <=W	100 <=W	100 <=W	200 <=W	100 <=W	50 <=W	100 <=W	20 <=W
17	97/06/03	76857-R	50 <=W	50 <=W	20 <=W	100 <=W	100 <=W	200 <=W	100 <=W	50 <=W	100 <=W	20 <=W
"	"	76858-R	50 <=W	50 <=W	20 <=W	100 <=W	100 <=W	200 <=W	100 <=W	50 <=W	100 <=W	20 <=W
18	97/06/03	76859	50 <=W	50 <=W	20 <=W	100 <=W	100 <=W	200 <=W	100 <=W	50 <=W	100 <=W	20 <=W
19	97/06/03	76860	50 <=W	50 <=W	20 <=W	100 <=W	100 <=W	200 <=W	100 <=W	50 <=W	100 <=W	20 <=W
20	97/06/03	76843	50 <=W	50 <=W	20 <=W	100 <=W	100 <=W	200 <=W	100 <=W	50 <=W	100 <=W	20 <=W
21	97/06/03	76846-R	50 <=W	50 <=W	20 <=W	100 <=W	100 <=W	200 <=W	100 <=W	50 <=W	100 <=W	20 <=W
"	"	76847-R	50 <=W	50 <=W	20 <=W	100 <=W	100 <=W	200 <=W	100 <=W	50 <=W	100 <=W	20 <=W
19	97/06/03	76861-SB	50 <=W	50 <=W	20 <=W	100 <=W	100 <=W	200 <=W	100 <=W	50 <=W	100 <=W	20 <=W
"	"	76862-TB	50 <=W	50 <=W	20 <=W	100 <=W	100 <=W	200 <=W	100 <=W	50 <=W	100 <=W	20 <=W
PWQO			--	200000	--	--	4000	--	--	--	--	--

NOTES blank or "--" indicates that data is not available for this parameter or sample
" <=W " = no measurable response (zero) less than reported value
" -R " = field temporal replicate
" -DC " = Depth Composite
" -SB " = System Blank
" -TB " = Travel Blank

Table D-8. Chlorinated phenols concentrations in Lake Couchiching water samples.
All concentrations in ng/l (ppt).

Station Number	Sample Date	Field Sample Number	2,4-Dichloro-phenol	2,3,4-Trichlor-phenol	2,4,5-Trichlor-phenol	2,4,6-Trichlor-phenol	2,3,4,5-Tetrachloro-phenol	2,3,4,6-Tetrachloro-phenol	Penta-chloro-phenol
1	97/06/03	76837	2000 <=W	100 <=W	100 <=W	20 <=W	20 <=W	20 <=W	10 <=W
2	97/06/03	76838	2000 <=W	100 <=W	100 <=W	20 <=W	20 <=W	20 <=W	10 <=W
3	97/06/03	76839	2000 <=W	100 <=W	100 <=W	20 <=W	20 <=W	20 <=W	10 <=W
4	97/06/03	76840	2000 <=W	100 <=W	100 <=W	20 <=W	20 <=W	20 <=W	10 <=W
5	97/06/03	76841	2000 <=W	100 <=W	100 <=W	20 <=W	20 <=W	20 <=W	10 <=W
"	"	76842-DC	2000 <=W	100 <=W	100 <=W	20 <=W	20 <=W	20 <=W	10 <=W
6	97/06/03	76844	2000 <=W	100 <=W	100 <=W	20 <=W	20 <=W	20 <=W	10 <=W
7	97/06/03	76845	2000 <=W	100 <=W	100 <=W	20 <=W	20 <=W	20 <=W	10 <=W
8	97/06/03	76848	2000 <=W	100 <=W	100 <=W	20 <=W	20 <=W	20 <=W	10 <=W
9	97/06/03	76849	2000 <=W	100 <=W	100 <=W	20 <=W	20 <=W	20 <=W	10 <=W
10	97/06/03	76850	2000 <=W	100 <=W	100 <=W	20 <=W	20 <=W	20 <=W	10 <=W
11	97/06/03	76851	2000 <=W	100 <=W	100 <=W	20 <=W	20 <=W	20 <=W	10 <=W
12	97/06/03	76852	2000 <=W	100 <=W	100 <=W	20 <=W	20 <=W	20 <=W	10 <=W
13	97/06/03	76853	2000 <=W	100 <=W	100 <=W	20 <=W	20 <=W	20 <=W	10 <=W
14	97/06/03	76854	2000 <=W	100 <=W	100 <=W	20 <=W	20 <=W	20 <=W	10 <=W
15	97/06/03	76855-DC	2000 <=W	100 <=W	100 <=W	20 <=W	20 <=W	20 <=W	10 <=W
16	97/06/03	76856	2000 <=W	100 <=W	100 <=W	20 <=W	20 <=W	20 <=W	10 <=W
17	97/06/03	76857-R	2000 <=W	100 <=W	100 <=W	20 <=W	20 <=W	20 <=W	10 <=W
"	"	76858-R	2000 <=W	100 <=W	100 <=W	20 <=W	20 <=W	20 <=W	10 <=W
18	97/06/03	76859	2000 <=W	100 <=W	100 <=W	20 <=W	20 <=W	20 <=W	10 <=W
19	97/06/03	76860	2000 <=W	100 <=W	100 <=W	20 <=W	20 <=W	20 <=W	10 <=W
20	97/06/03	76843	2000 <=W	100 <=W	100 <=W	20 <=W	20 <=W	20 <=W	10 <=W
21	97/06/03	76846-R	2000 <=W	100 <=W	100 <=W	20 <=W	20 <=W	20 <=W	10 <=W
"	"	76847-R	2000 <=W	100 <=W	100 <=W	20 <=W	20 <=W	20 <=W	10 <=W
19	97/06/03	76861-SB	2000 <=W	100 <=W	100 <=W	20 <=W	20 <=W	20 <=W	10 <=W
"	"	76862-TB	2000 <=W	100 <=W	100 <=W	20 <=W	20 <=W	20 <=W	10 <=W
PWQO			200	18	18	18	1000	1000	500

NOTES blank or "--" indicates that data is not available for this parameter or sample
"<=W" = no measurable response (zero) less than reported value
" -R " = field temporal replicate
"-DC " = Depth Composite
" - SB " = System Blank
" - TB " = Travel Blank

Table D-8. Chlorinated phenols concentrations in Lake Couchiching water samples.
All concentrations in ng/l (ppt).

Station Number	Sample Date	Field Sample Number	2,4-Dichloro-phenol		2,3,4-Trichlor-phenol		2,4,5-Trichlor-phenol		2,4,6-Trichlor-phenol		2,3,4,5-Tetrachloro-phenol		2,3,4,6-Tetrachloro-phenol		Penta-chloro-phenol	
1	97/06/03	76837	2000	<=W	100	<=W	100	<=W	20	<=W	20	<=W	20	<=W	10	<=W
2	97/06/03	76838	2000	<=W	100	<=W	100	<=W	20	<=W	20	<=W	20	<=W	10	<=W
3	97/06/03	76839	2000	<=W	100	<=W	100	<=W	20	<=W	20	<=W	20	<=W	10	<=W
4	97/06/03	76840	2000	<=W	100	<=W	100	<=W	20	<=W	20	<=W	20	<=W	10	<=W
5	97/06/03	76841	2000	<=W	100	<=W	100	<=W	20	<=W	20	<=W	20	<=W	10	<=W
"	"	76842-DC	2000	<=W	100	<=W	100	<=W	20	<=W	20	<=W	20	<=W	10	<=W
6	97/06/03	76844	2000	<=W	100	<=W	100	<=W	20	<=W	20	<=W	20	<=W	10	<=W
7	97/06/03	76845	2000	<=W	100	<=W	100	<=W	20	<=W	20	<=W	20	<=W	10	<=W
8	97/06/03	76848	2000	<=W	100	<=W	100	<=W	20	<=W	20	< W	20	<=W	10	<=W
9	97/06/03	76849	2000	<=W	100	<=W	100	<=W	20	<=W	20	<=W	20	<=W	10	<=W
10	97/06/03	76850	2000	<=W	100	<=W	100	<=W	20	<=W	20	<=W	20	<=W	10	<=W
11	97/06/03	76851	2000	<=W	100	<=W	100	<=W	20	<=W	20	<=W	20	<=W	10	<=W
12	97/06/03	76852	2000	<=W	100	<=W	100	<=W	20	<=W	20	<=W	20	<=W	10	<=W
13	97/06/03	76853	2000	<=W	100	<=W	100	<=W	20	<=W	20	<=W	20	<=W	10	<=W
14	97/06/03	76854	2000	<=W	100	<=W	100	<=W	20	<=W	20	<=W	20	<=W	10	<=W
15	97/06/03	76855-DC	2000	<=W	100	<=W	100	<=W	20	<=W	20	<=W	20	<=W	10	<=W
16	97/06/03	76856	2000	<=W	100	<=W	100	<=W	20	<=W	20	<=W	20	<=W	10	<=W
17	97/06/03	76857-R	2000	<=W	100	<=W	100	<=W	20	<=W	20	<=W	20	<=W	10	<=W
"	"	76858-R	2000	<=W	100	<=W	100	<=W	20	<=W	20	<=W	20	<=W	10	<=W
18	97/06/03	76859	2000	<=W	100	<=W	100	<=W	20	<=W	20	<=W	20	<=W	10	<=W
19	97/06/03	76860	2000	<=W	100	<=W	100	<=W	20	<=W	20	<=W	20	<=W	10	<=W
20	97/06/03	76843	2000	<=W	100	<=W	100	<=W	20	<=W	20	<=W	20	<=W	10	<=W
21	97/06/03	76846-R	2000	<=W	100	<=W	100	<=W	20	<=W	20	<=W	20	<=W	10	<=W
"	"	76847-R	2000	<=W	100	<=W	100	<=W	20	<=W	20	<=W	20	<=W	10	<=W
19	97/06/03	76861-SB	2000	<=W	100	<=W	100	<=W	20	<=W	20	<=W	20	<=W	10	<=W
"	"	76862-TB	2000	<=W	100	<=W	100	<=W	20	<=W	20	<=W	20	<=W	10	<=W
PWQO			200		18		18		18		1000		1000		500	

NOTES blank or "-" indicates that data is not available for this parameter or sample
"<=W" = no measurable response (zero) less than reported value
" -R " = field temporal replicate
"-DC " = Depth Composite
" - SB " = System Blank
" - TB " = Travel Blank

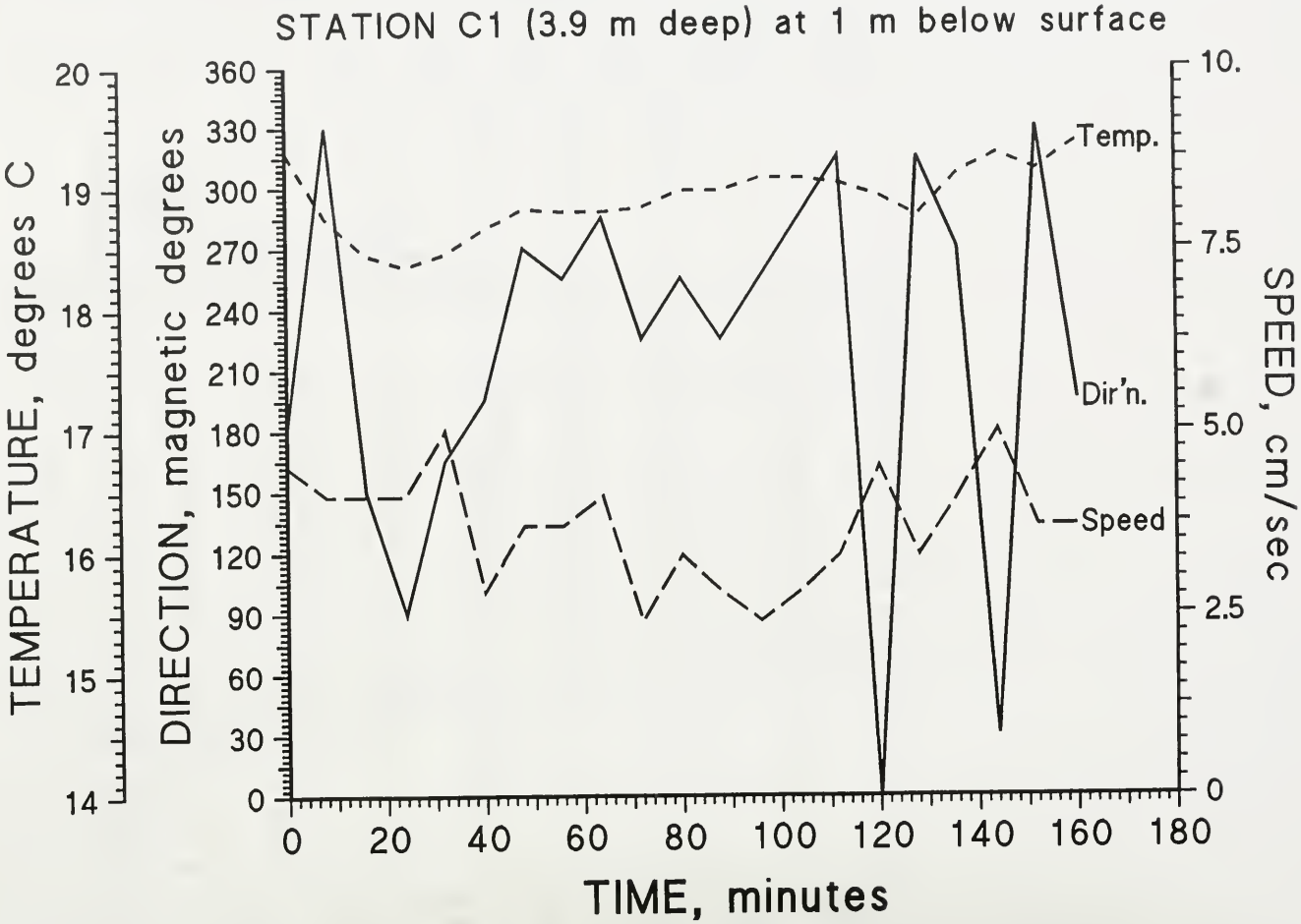

Figure D-1. Temperature, current speed and direction at Station C1 at 1 m below surface.

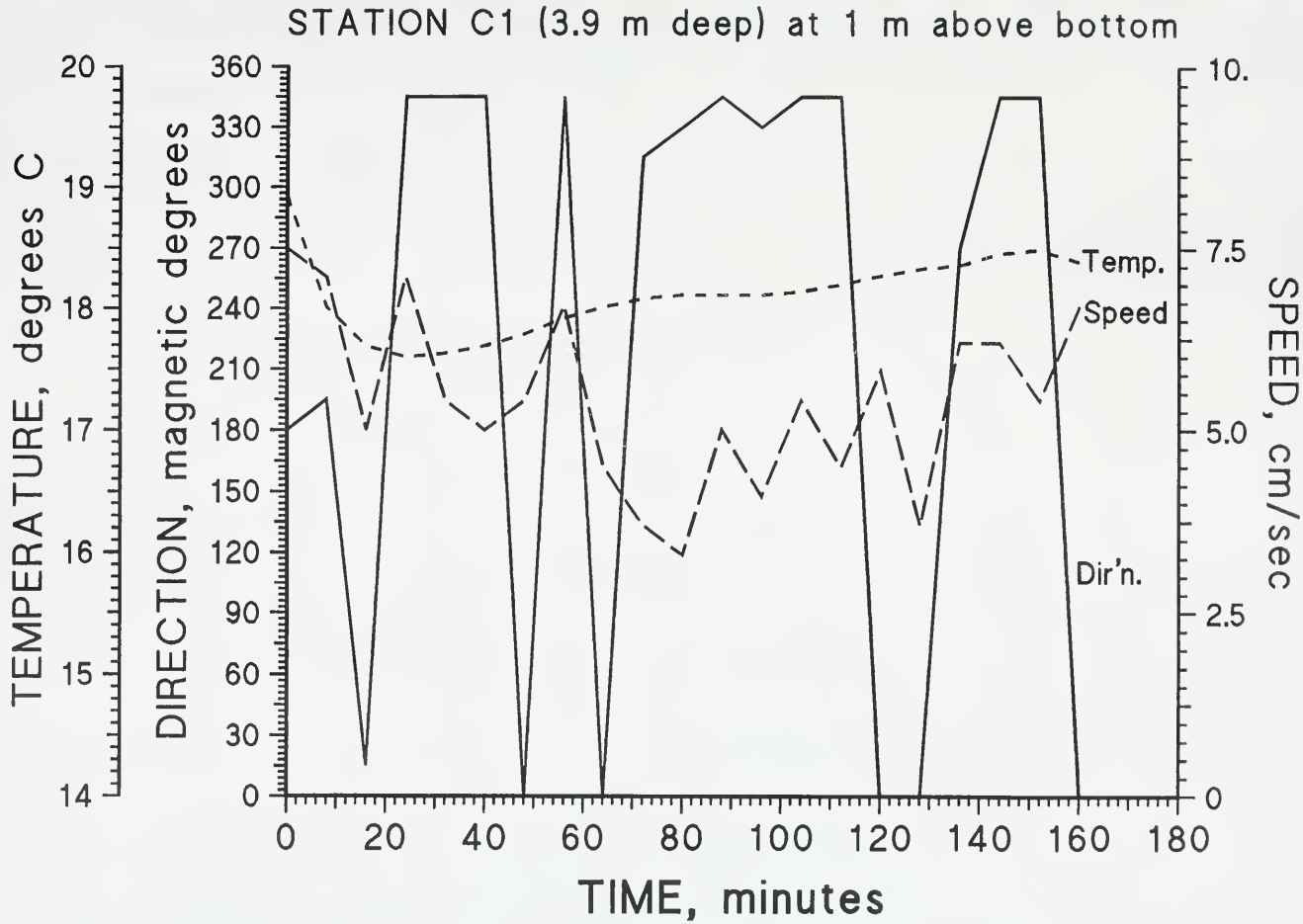

Figure D-2. Temperature, current speed and direction at Station C1 at 1 m above bottom.

Appendix E

Appendix E Sediment Core Data

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Table E-1. Field observations of Lake Couchiching sediment core samples.

Station Number	Sample Date	Sediment Depth, cm	Field Sample Number	Description	Odour	Fauna	Flora
5	97/06/04	0 - 5	76365	cohesive, gray-brown, watery ooze	slight H2S	sparse chironomids	sparse filamentous algae on surface
"	"	5 - 15	76366	less watery gray ooze; sparse marl	very slight H2S		--
"	"	15 - 25	76367	gray, more cohesive silt, moderate marl, moderate gas pockets	almost no H2S	snail shells	--
"	"	25 - 35	76368	still more cohesive gray silt; moderate marl; moderate gas pockets	almost no H2S	snail shells	--
"	"	35 - 45	76369	packed, gray silt; moderate marl; moderate gas pockets	still less H2S	snail shells	--
"	"	45 - 55	76370	much thicker & drier gray silt; moderate marl; sparse air pockets	--	snail shells	--
"	"	55 - 65	76371	thicker, sticky, cohesive gray silt; less marl	--	snail shells	--
"	"	65 - 75	76372	thicker, drier, very cohesive gray silt, moderate fine marl	--	snail shells	--
"	"	75 - 85	76373	still thicker & drier gray; moderate fine marl	--	snail shells	--
"	"	85 - 95	76374	stll drier, gray; moderate fine marl; piece of bark	--	snail shells	--
"	"	95 - 105	76375	thicker & drier gray mud (almost clay-like); moderate fine marl	--	--	--
"	"	105 - 115	76376	thicker & still drier gray mud (almost clay-like); moderate fine marl	--	--	--
15	97/06/04	0 - 5	76377	watery, gray ooze	--	1/2 mussel shell	--
"	"	5 - 15	76378	less watery, gray ooze	--	1/2 mussel shell	--
"	"	15 - 25	76379	thicker, gray ooze; sparse, fine marl	--	--	--
"	"	25 - 35	76380	thicker gray ooze; sparse fine marl	--	sparse fingernail clam & snail shells	--
"	"	35 - 45	76381	thicker gray ooze; sparse fine marl; some small gas pockets	--	--	--
"	"	45 - 55	76382	thicker cohesive, jelly-like gray muck; very sparse marl	--	sparse fingernail clam shells	--
"	"	55 - 65	76383	very thick, more clay-like, drier gray mud; small gas pockets	--	moderate no. of fingernail clam shells	--
"	"	65 - 75	76384	thicker, more clay-like gray mud, moderate marl; small gas pockets	--	snail shells	--
"	"	75 - 85	76385	very thick, cly-like gray; moderate very fine marl; small gas pockets	--	--	--
"	"	85 - 95	76386	very thick gray mud; small gas pockets; very sparse marl	--	--	--
"	"	95 - 105	76387	hard, dense, dry gray clay; small gas pockets	--	--	--
"	"	105 - 124	76388	very dry, gray clay; moderate marl	--	fingernail clam shells; large mussel shell	--

Table E-2. Particle size, macro-ion, nutrient, organic carbon and solvent extractables concentrations in Lake Couchiching sediment cores.
Concentration units as noted: % = percent; g/kg = ppth; mg/kg = ppm. Except for particle size, all results are on dry weight basis.

Station Number	Sample Date	Sediment Depth, cm	Field Sample Number	Field Density g/cm3	Moisture %	Coarse Sand 2000-1000 um %	Sand 1000-63 um %	Silt & Clay <63 um %	Residue, total loss on ignition g/kg	Organic Carbon, total g/kg	Calcium, unf total mg/kg	Magnesium, unf total mg/kg	Chloride, aq extr mg/kg
5	97/06/04	0-5	76365	1 21	74	0 00	21 83	78 17	78	***43***	260000	4500	78
"	"	5-15	76366	1 29	66	0 00	31 36	68 64	69	***39***	260000	4400	59
"	"	15-25	76367	1 28	65	0 00	27 08	72 92	69	***39***	270000	4500	51
"	"	25-35	76368	1 32	61	0 08	35 65	64 27	65	***34***	270000	4500	34
"	"	35-45	76369	1 34	58	0 00	31 43	68 57	60	***41***	270000	4400	26
"	"	45-55	76370	1 33	57	0 00	25 86	74 14	65	***36***	270000	4300	27
"	"	55-65	76371	1 39	53	0 00	29 99	70 01	62	***40***	280000	4300	20
"	"	65-75	76372	1 39	53	0 00	23 46	76 54	60	***34***	280000	4200	18
"	"	75-85	76373	1 38	53	0 08	34 35	68 57	58	***30***	270000	4600	14
"	"	85-95	76374	1 42	48	0 00	22 63	77 37	48	***29***	280000	4600	14
"	"	95-105	76375	--	47	0 00	28 13	71 87	47	***25***	280000	4700	14
"	"	105-115	76376	--	47	0 00	25 83	74 17	49	***29***	270000	4600	13
"	"	Mean, 25-115 cm		1 37	53	0 02	28 59	71 72	57	***33***	274444	4467	20
15	97/06/04	0-5	76377	1 18	75	0 00	19 04	80 96	74	***46***	240000	4800	78
"	"	5-15	76378	1 27	68	0 00	22 29	77 71	70	***39***	230000	4800	58
"	"	15-25	76379	1 31	63	0 00	23 46	76 54	61	***36***	240000	4900	42
"	"	25-35	76380	1 34	57	0 00	28 92	71 08	61	***34***	250000	4700	29
"	"	35-45	76381	1 33	59	0 00	22 16	77 84	66	***37***	250000	4800	25
"	"	45-55	76382	1.37	54	0 00	22 44	77 56	60	***35***	260000	4800	20
"	"	55-65	76383	1 39	54	0 00	35 18	64 82	62	***34***	240000	5000	19
"	"	65-75	76384	1 43	50	0 00	28 50	71 50	51	***31***	260000	4700	11
"	"	75-85	76385	1 45	48	0 00	41.73	58 27	46	***38***	260000	4600	13
"	"	85-95	76386	--	49	0 00	38 40	61 60	48	***29***	260000	4600	12
"	"	95-105	76387	--	49	0 00	46 91	53 09	50	***33***	260000	4700	13
"	"	105-124	76388	--	51	0 00	24 21	75.79	56	--	250000	5100	13
"	"	Mean, 25-124 cm		0.75	52	0 00	32 05	67 95	56	***34***	254444	4778	17
5 & 15	Mean & Std Dev'n,, 25-124 cm			1 38 +/-0 04	53 +/-4 4	0 01 +/-0 03	30 32 +/-7 12	69 84 +/-7 06	56 +/-7 0	***32*** +/-8 9	264444 +/-11991	4622 +/-232	19 +/-6 9
PSQG-LEL				--	--	--	--	--	--	10	--	--	--
PSQG-SEL				--	--	--	--	--	--	1000	--	--	--
OWDMDG				--	--	--	--	--	--	--	--	--	--

NOTES "<MDL" = less than method detection limit
italicized and bolded values exceed PSQ-LEL guideline for the protection of sediment-dwelling organisms

Table E-2. Particle size, macro-ion, nutrient, organic carbon and solvent extractables concentrations in Lake Conchiching sediment cores.
Concentration units as noted: % = percent; g/kg = ppth; mg/kg = ppm. Except for particle size, all results are on dry weight basis

Station Number	Sample Date	Sediment Depth, cm	Field Sample Number	Nitrogen, total Kjeldahl, unf react g/kg		Phosphorus, unf total g/kg		Sulphur, total g/kg		Solvent Extractables mg/kg		Total Petroleum Hydrocarbons, mg/kg	
5	97/06/04	0-5	76365	***4.0***		0.24		1.7		770		100	<MDL
"	"	5-15	76366	***2.9***		0.20		2.3		640		100	<MDL
"	"	15-25	76367	***3.0***		0.16		2.1		560		100	<MDL
"	"	25-35	76368	***2.6***		0.16		1.4		450		100	<MDL
"	"	35-45	76369	***2.7***		0.16		1.4		390		100	<MDL
"	"	45-55	76370	***2.9***		0.08		1.3		500		100	<MDL
"	"	55-65	76371	***2.4***		0.16		1.1		340		100	<MDL
"	"	65-75	76372	***2.8***		0.12		1.2		450		100	<MDL
"	"	75-85	76373	***2.6***		0.12		1.2		360		100	<MDL
"	"	85-95	76374	***2.1***		0.16		1.0		330		100	<MDL
"	"	95-105	76375	***1.8***		0.16		0.94		300		100	<MDL
"	"	105-115	76376	***1.7***		0.16		0.89		340		100	<MDL
"	"	Mean, 25-115 cm		***2.4***		0.14		1.2		384		100	<MDL
15	97/06/04	0-5	76377	***3.6***		0.32		1.3		410		100	<MDL
"	"	5-15	76378	***3.6***		0.20		2.0		390		100	<MDL
"	"	15-25	76379	***2.8***		0.18		1.4		420		100	<MDL
"	"	25-35	76380	***2.0***		0.16		1.1		360		100	<MDL
"	"	35-45	76381	***2.5***		0.16		1.1		390		100	<MDL
"	"	45-55	76382	***2.5***		0.16		1.1		420		100	<MDL
"	"	55-65	76383	***2.6***		0.12		1.1		260		100	<MDL
"	"	65-75	76384	***2.2***		0.16		0.96		300		100	<MDL
"	"	75-85	76385	***1.6***		0.16		0.84		240		100	<MDL
"	"	85-95	76386	***1.8***		0.16		0.76		240		100	<MDL
"	"	95-105	76387	***1.7***		0.12		0.87		270		100	<MDL
"	"	105-124	76388	***2.4***		0.16		1.0		360		100	<MDL
"	"	Mean, 25-124 cm		***2.1***		0.15		0.98		316		100	<MDL
5 & 15	Mean & Std Dev'n., 25-124 cm			***2.3***	+/-0.4	0.15	+/-0.02	1.07	+/-0.18	350	+/-75	100	<MDL
PSQG-LEL				0.55		0.60		--		--		--	
PSQG-SEL				4.8		2.00		--		--		--	
OWDMDG				--		--		--		1500		--	

NOTES: "<MDL" = less than method detection limit

italicized and bolded values exceed PSQ-LEL guideline for the protection of sediment-dwelling organisms

Table E3. Microscopic characteristics of Lake Couchiching sediment core samples

Number	Sample Date	Sediment Depth, cm	Field Sample Number	Silt & Clay (carbonates, quartz)	Clay (carbonates, quartz)	Biological Material (shell debris)	Vegetation Fibres
5	97/06/04	0-5	76365	90 %		10 %	Trace
"	"	5-15	76366	95 %		5 %	Trace
"	"	15-25	76367		95 %	5 %	Trace
"	"	25-35	76368		90 %	10 %	--
"	"	35-45	76369		100 %	Trace	--
"	"	45-55	76370		95 %	5 %	--
"	"	55-65	76371		90 %	5 %	--
"	"	65-75	76372		100 %	Trace	--
"	"	75-85	76373		100 %	Trace	--
"	"	85-95	76374		95 %	5 %	--
"	"	95-105	76375		100 %	Trace	--
"	"	105-115	76376		100 %	Trace	--
15	97/06/04	0-5	76377		100 %	Trace	Trace
"	"	5-15	76378		100 %	Trace	--
"	"	15-25	76379		95 %	5 %	--
"	"	25-35	76380		100 %	Trace	--
"	"	35-45	76381		95 %	5 %	--
"	"	45-55	76382		95 %	5 %	--
"	"	55-65	76383		90 %	10 %	--
"	"	65-75	76384		100 %	Trace	--
"	"	75-85	76385		100 %	Trace	--
"	"	85-95	76386		100 %	Trace	--
"	"	95-105	76387		100 %	Trace	--
"	"	105-124	76388		95 %	5 %	--

Note: no fossilized plants, wood bark chips, wood char or coal soot was found.

Table E-4. Inorganics and heavy metal concentrations in Lake Couchiching sediment core samples
All concentrations in mg/kg (ppm), dry weight.

Station Number	Sample Date	Sediment Depth, cm	Field Sample Number	Aluminum,	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Iron	Lead	Manganese
5	97/06/04	0-5	76365	7200	0 6 <T	2 4	130	0 5 <=WE	***2.6***	24	5 4	14	8600	27	340
"	"	5-15	76366	7200	0.7 <T	3 9	130	0 5 <=WE	***1.2***	14	4 3	10	8600	23	320
"	"	15-25	76367	7600	0 4 <T	4 2	140	0 5 <=WE	***0.9*** <TE	14	6 7	8 0	9200	13	300
"	"	25-35	76368	7300	0 2 <=W	0 9 <T	140	0 5 <=WE	0 5 <TE	12	3 8	7 0	9000	2 0 <=WE	280
"	"	35-45	76369	7400	0 2 <=W	0 5 <T	130	0 5 <=WE	0 3 <TE	12	3 6	7 0	8900	2 0 <=WE	270
"	"	45-55	76370	6800	0 2 <=W	0 5 <T	130	0 5 <=WE	0 4 <TE	12	3 5	7 0	8300	4 0 <TE	260
"	"	55-65	76371	6700	0 2 <=W	0 5 <T	130	0 5 <=WE	0 4 <TE	11	3 6	6 0	8200	2 0 <=WE	280
"	"	65-75	76372	6200	0 2 <=W	0 4 <T	130	0 5 <=WE	0 5 <TE	11	3 6	6 0	7900	8 0 <TE	270
"	"	75-85	76373	6800	0 2 <=W	0 5 <T	130	0 5 <=WE	0 2 <=WE	11	3 6	7 0	8800	3 0 <TE	280
"	"	85-95	76374	7000	0 2 <=W	0 4 <T	130	0 5 <=WE	0 2 <=WE	12	3 7	6 0	9000	3 0 <TE	300
"	"	95-105	76375	6900	0 2 <=W	0 4 <T	140	0 5 <=WE	0 4 <TE	12	4 6	6 0	8900	5 0 <TE	300
"	"	105-115	76376	7100	0 2 <=W	0 4 <T	140	0 5 <=WE	0 3 <TE	12	4 0	7 0	9100	3 0 <TE	300
"	"	Mean, 25-115 cm		6911	0 2 <=W	0 5 <T	133	0 5 <=WE	0 3 <TE	12	3 8	6 6	8678	2 9 <TE	282
15	97/06/04	0-5	76377	8300	0 4 <T	2 2	140	0.5 <=WE	***0.7*** <TE	17	4 9	13	11000	***37***	400
"	"	5-15	76378	8300	0 5 <T	4 2	130	0 5 <=WE	***0.7*** <TE	16	4 6	10	11000	24	360
"	"	15-25	76379	8500	0 2 <=W	1 6	140	0 5 <=WE	***0.8*** <TE	15	4 9	8 0	12000	4 0 <TE	350
"	"	25-35	76380	8100	0 2 <=W	0 6 <T	140	0 5 <=WE	0 5 <TE	14	4 2	7 0	11000	4 0 <TE	340
"	"	35-45	76381	7800	0 2 <=W	0 5 <T	130	0 5 <=WE	***0.6*** <TE	13	4 8	7 0	11000	5 0 <TE	340
"	"	45-55	76382	7800	0 2 <=W	0 5 <T	130	0 5 <=WE	0 4 <TE	14	4 5	7 0	11000	5 0 <TE	350
"	"	55-65	76383	8100	0 2 <=W	0 5 <T	130	0 5 <=WE	0 5 <TE	15	4 8	7 0	12000	2 0 <=WE	350
"	"	65-75	76384	7500	0 2 <=W	0 4 <T	130	0 5 <=WE	0 3 <TE	13	4 7	6 0	11000	4 0 <TE	350
"	"	75-85	76385	7100	0 2 <=W	0 4 <T	140	0 5 <=WE	***0.7*** <TE	12	3 9	6 0	10000	6 0 <TE	350
"	"	85-95	76386	7400	0 2 <=W	0 3 <T	140	0 5 <=WE	***0.8*** <TE	13	4 4	7 0	10000	6 0 <TE	360
"	"	95-105	76387	7300	0 2 <=W	0 3 <T	140	0 5 <=WE	0 4 <TE	14	4 1	6 0	10000	3 0 <TE	360
"	"	105-124	76388	8100	0 2 <=W	0 5 <T	140	0 5 <=WE	0 3 <TE	15	4 8	8 0	12000	5 0 <TE	370
"	"	Mean, 25-124 cm		7689	0 2 <=W	0 4 <T	136	0 5 <=WE	0 5 <TE	14	4 5	6 8	10889	4 2 <TE	352
5 & 15	Mean & Std Dev'n , 25-124 cm			7300 +/-602	0 2 +/-0	0 5 +/-0 2	134 +/-9 3	0 5 +/-0	0 4 +/-0 1	13 +/-1 2	4 1 +/-0 4	6 7 +/-1 0	9783 +/-784	4 0 +/-2 2	317 +/-23
PSQG-LEL				--	--	6	--	--	0 6	26	--	16	20000	31	460
PSQG-SEL				--	--	33	--	--	10	110	--	110	40000	250	1100
OWDMDG				--	--	--	--	--	--	--	50	--	--	--	--

NOTES blank or "--" indicates that data is not available for this parameter or sample
"<T" = a measurable trace amount interpret with caution
"<=W" = no measurable response (zero) less than reported value
"<=TE" = a measurable trace after extra dilution or concentration caution
"<=WE" = no measurable response after extra dilution or concentration less than reported value
italicized and bolded values exceed PSQ-LEL guideline for the protection of sediment-dwelling organisms.

Table E-4. Inorganics and heavy metal concentrations in Lake Couchiching sediment core samples
All concentrations in mg/kg (ppm), dry weight.

Station Number	Sample Date	Sediment Depth, cm	Field Sample Number	Mercury	Molybdenum	Nickel	Selenium	Strontium	Titanium	Vanadium	Zinc
5	97/06/04	0-5	76365	0 07	0 5 <=WE	13	0 4 <T	220	460	21	53
"	"	5-15	76366	0 05	0 5 <=WE	12	0 6 <T	220	470	15	45
"	"	15-25	76367	0 05	0 5 <=WE	9 8	0 5 <T	220	500	16	33
"	"	25-35	76368	0 04 <T	0 5 <=WE	7 9	0 3 <T	220	480	14	25
"	"	35-45	76369	0 04 <T	0 5 <=WE	8 3	0 3 <T	220	500	15	25
"	"	45-55	76370	0 04 <T	0 5 <=WE	7 3	0 3 <T	210	470	14	24 <TE
"	"	55-65	76371	0 03 <T	0 5 <=WE	6 6	0 3 <T	220	470	14	23 <TE
"	"	65-75	76372	0 03 <T	0 5 <=WE	7 6	0 3 <T	220	420	13	22 <TE
"	"	75-85	76373	0 04 <T	0 5 <=WE	7 2	0 3 <T	220	480	14	24 <TE
"	"	85-95	76374	0 04 <T	0 5 <=WE	7 1	0 3 <T	220	520	15	25
"	"	95-105	76375	0 04 <T	0 5 <=WE	7 9	0 3 <T	220	500	15	24 <TE
"	"	105-115	76376	0 04 <T	0 5 <=WE	8 0	0 3 <T	220	530	15	25
"	"	Mean, 25-115 cm		0 04 <T	0 5 <=WE	7 5	0 3 <T	219	486	14	24
15	97/06/04	0-5	76377	0.07	0 5 <=WE	14	0 8 <T	200	520	20	62
"	"	5-15	76378	0 07	0 5 <=WE	12	0 7 <T	200	560	19	47
"	"	15-25	76379	0 04 <T	0 5 <=WE	9 6	0 4 <T	200	560	18	32
"	"	25-35	76380	0 03 <T	0 5 <=WE	9 0	0 3 <T	200	560	17	29
"	"	35-45	76381	0 03 <T	0 5 <=WE	8 1	0 4 <T	200	540	17	30
"	"	45-55	76382	0 03 <T	0 5 <=WE	8 8	0 3 <T	210	550	17	30
"	"	55-65	76383	0 04 <T	0 5 <=WE	8 7	0 4 <T	200	600	18	30
"	"	65-75	76384	0 05	0 5 <=WE	9 1	0 3 <T	200	550	16	28
"	"	75-85	76385	0 03 <T	0 5 <=WE	8 3	0 3 <T	210	500	16	27
"	"	85-95	76386	0 04 <T	0 5 <=WE	8 5	0 3 <T	200	550	16	28
"	"	95-105	76387	0 04 <T	0 5 <=WE	8 6	0 3 <T	200	550	16	27
"	"	105-124	76388	0 03 <T	0 5 <=WE	10	0 4 <T	200	590	19	31
"	"	Mean, 25-124 cm		0 04 <T	0 5 <=WE	8 8	0.3 <T	202	554	17	29
5 & 15	Mean & Std Dev'n, 25-124 cm			0 04 +/-0 01	0 5 +/-0	8 2 +/-0 8	0 3 +/-0 1	211 +/-3 3	520 +/-46	16 +/-1 4	27 +/-2 0
PSQG-LEL				0 2	--	16	--	--	--	--	120
PSQG-SEL				2 0	--	75	--	--	--	--	820
OWDMDG				--	--	--	--	--	--	--	--

NOTES blank or "--" indicates that data is not available for this parameter or sample
"<T" = a measurable trace amount interpret with caution
"<=W" = no measurable response (zero) less than reported value
"<=TE" = a measurable trace after extra dilution or concentration caution
"<=WE" = no measurable response after extra dilution or concentration: less than reported value
italicized and bolded values exceed PSQ-LEL guideline for the protection of sediment-dwelling organisms.

Appendix F

Appendix F - Surficial Sediment Data

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Table F-1. Field observations of Lake Couchiching surficial sediment samples.

Station Number	Sample Date	Field Sample Number	Description	Odour	Fauna
1	97/05/29	76812	silty ooze & some hard clay, some organic matter	H_2S	amphipods, chironomid, damselfly, Dreissena, isopods, *Hexagenia*, mayfly, worm, crayfish; snail & clam shells
2	"	76813	silty ooze	H_2S	amphipods, chironomid, *Dreissena*, *Hexagenia*, leech, snails, snail shells
3	"	76814	silty ooze	H_2S	amphipods, chironomid, *Dreissena*, clam, *Hexagenia*, crayfish, snail shells
4	"	76815	silty ooze	H_2S	amphipods, caddis fly, chironomid, damselfly, *Dreissena*, *Hexagenia*, mayfly, snails; snail shells
5	"	76816	silty ooze	slight H_2S	chironomids, phantom midge, *Dreissena*, clam, *Hexagenia*, snails
6	"	76817	gray, silty ooze, tan surface layer	slight H_2S	chironomids, *Dreissena*, *Hexagenia*, worms, abundant snail shells
7	"	76818	gray silty ooze	slight to strong H_2S	caddis fly, chironomids, dragon fly, *Dreissena*, *Hexagenia*, mayfly, snails, crayfish
8	"	76819	gray silty ooze	none	amphipods, chironomid, clam, damselfly, *Dreissena*, fishfly, isopods, *Hexagenia*, leech, crayfish
9	"	76820-R	gray silty ooze	none	amphipods, chironomids, *Dreissena*, *Hexagenia*, mayfly, worm
"	"	76821-R	gray silty ooze	none	chironomid, clams, *Dreissena*
"	"	76822-R	gray silty ooze	H_2S	amphipod, chironomid, *Dreissena*
10	97/05/30	76826	gray silty ooze	none	amphipods, chironomids, dragon fly, *Dreissena*, *Hexagenia*, snails, worms, crayfish; abundant snail shells
11	"	76827	gray silty ooze	none	caddisfly, chironomids, dragon fly, *Dreissena*, *Hexagenia*, snails, worms, crayfish, abundant snail shells
12	"	76828	gray silty ooze	none to slight H_2S	amphipods, chironomids, clams, *Dreissena*, *Hexagenia*, mayfly, abundant snail shells
13	"	76829	brown silt over gray, sandy clay	none	amphipods, caddisfly, chironomids, clams, *Dreissena*, *Hexagenia*, leech, abundant snail shells
14	97/06/02	76831	gray silty ooze, abundant organic detritus (bark)	none	amphipods, chironomids, clams, dragonfly, *Dreissena*, mayfly, worms, snail shells
15	"	76830	gray silty ooze	none	chironomids, phantom midge, clams, *Dreissena*, *Hexagenia*, snail shells
16	"	76832	gray silty ooze	slight H_2S	amphipods, chironomids, damselfly, dragonfly, *Dreissena*, *Hexagenia*, mayfly, leech, snails, abundant snail shells
17	"	76833-R	gray silty ooze	none	chironomid, phantom midge, clams, *Dreissena*, *Hexagenia*, snail shells
"	"	76834-R	gray silty ooze	none	chironomid, phantom midge, clams, *Dreissena*, fishfly, *Hexagenia*; snail shells
"	"	76835-R	gray silty ooze	none	chironomid, phantom midge, clams, Dreissena, fishfly, Hexagenia, snail shells
18	97/05/29	76823	silty sand with some hard clay; abundant detritus	slight H_2S	amphipods, abundant chironomids, clams, *Dreissena*, isopod, mayfly, snail, worms
19	"	76824	gray silty ooze	H_2S	amphipods, chironomids, *Dreissena*, isopods, abundant snails, crayfish
20	"	76825	gray silty ooze	H_2S	chironomids, caddisfly, *Dreissena*, worms, crayfish
21	97/06/02	76836	gray silty ooze	H_2S	amphipods, chironomids, *Dreissena*, *Hexagenia*, mayfly, crayfish; abundant snail shells

NOTE "-R" = field spatial replicate

Table F-1. Field observations of Lake Couchiching surficial sediment samples.

Station Number	Sample Date	Field Sample Number	Station Number	Sample Date	Field Sample Number	Flora
1	97/05/29	76812	1	97/05/29	76812	calcified *Chara* (50% cover), *Eladea*, macrophyte tubers
2	"	76813	2	"	76813	*Chara* (30-40% cover), macrophyte tubers
3	"	76814	3	"	76814	heavily calcified *Chara* (100% cover)
4	"	76815	4	"	76815	calcified Chara (60% cover) & macrophyte tubers
5	"	76816	5	"	76816	absent to abundant filamentous algae
6	"	76817	6	"	76817	*Chara* (0-20 % cover), macrophyte tubers
7	"	76818	7	"	76818	heavily calcified *Chara* (95% cover), sparse *Myriophyllum* & macrophyte tubers, sparse globular colonial algae
8	"	76819	8	"	76819	calcified *Chara* (90% cover)
9	"	76820-R	9	"	76820-R	calcified *Chara* (90% cover)
"	"	76821-R	"	"	76821-R	calcified *Chara* (90% cover); sparse globular colonial algae
"	"	76822-R	"	"	76822-R	calcified *Chara* (90% cover)
10	97/05/30	76826	10	97/05/30	76826	calcified *Chara* (85% cover)
11	"	76827	11	"	76827	calcified *Chara* (95% cover)
12	"	76828	12	"	76828	calcibed *Chara* (90-95% cover)
13	"	76829	13	"	76829	calcified *Chara* (70-80% cover)
14	97/06/02	76831	14	97/06/02	76831	*Chara* (90% cover), macrophyte tubers
15	"	76830	15	"	76830	none
16	"	76832	16	"	76832	*Chara* (70-80% cover), macrophyte tubers
17	"	76833-R	17	"	76833-R	none
"	"	76834-R	"	"	76834-R	none
"	"	76835-R	"	"	76835-R	none
18	97/05/29	76823	18	97/05/29	76823	*Chara* (20% cover), *Eladea* & *Lemna*, sparse algae
19	"	76824	19	"	76824	*Chara* (40% cover), sparse *Elodea*, common algae
20	"	76825	20	"	76825	calcified *Chara* (100% cover)
21	97/06/02	76836	21	97/06/02	76836	*Chara* (70% cover), macrophyte tubers

NOTE "-R" = field spatial replicate NOTE "-R" = field spatial replicate

Table F-2. Microscopic characteristics of Lake Couchiching surficial sediment samples.

Station Number	Sample Date	Field Sample Number	Sand,Silt & Clay (carbonates, quartz)	Biological Material (shell debris)	Vegetation Fibres	Fossilized Plant	Wood & Bark Chips	Wood Char	Coal Soot	Elemental Composition
1	97/05/29	76812	80 %	20 %	--	--	Trace	Trace	Trace	Ca > Fe, K, Si
2	"	76813	80 %	20 %	--	--	--	--	Trace	Ca > K, Si
3	"	76814	70 %	20 %	10 %	--	--	--	--	Ca > Fe, K, Si
4	"	76815	80 %	20 %	Trace	--	--	--	--	
5	"	76816	90 %	5 %	5 %	--	--	--	--	Ca > Fe, K, Si
6	"	76817	70 %	20 %	10 %	--	--	--	--	
7	"	76818	60 %	5 %	5 %	30 %	--	--	--	
8	"	76819	60 %	10 %	10 %	20 %	--	--	--	
9	"	76820	80 %	10 %	--	10 %	--	--	--	
"	"	76821	80 %	10 %	--	10 %	--	--	--	
"	"	76822	75 %	10 %	5 %	10 %	--	--	--	
10	97/05/30	76826	60 %	20 %	20 %	--	--	--	--	
11	"	76827	70 %	20 %	--	10 %	--	--	--	
12	"	76828	60 %	10 %	10 %	20 %	--	--	--	
13	"	76829	80 %	20 %	--	Trace	--	--	--	
14	97/06/02	76831	70 %	20 %	10 %	--	--	--	--	Ca > Al, Fe, K, Si
15	"	76830	90 %	10 %	--	--	--	--	--	Ca > Al, Fe, K, Si
16	"	76832	80 %	10 %	10 %	--	--	--	--	Ca, Fe, Si > Al, Cl, Mg, K
17	"	76833	100 %	Trace	--	--	--	--	--	Ca
"	"	76834	90 %	10 %	--	--	--	--	--	Ca > Al, Fe, K, Si
"	"	76835	90 %	10 %	Trace	--	--	--	--	
18	97/05/29	76823	70 %	20 %	10 %	--	Trace	--	--	
19	"	76824	50 %	40 %	10 %	--	--	--	--	
20	"	76825	60 %	10 %	10 %	20 %	--	--	--	
21	97/06/02	76836	70 %	20 %	--	10 %	Trace	--	--	

NOTE: "--" = not detected / not found.

Table F-3. Macro-ion, nutrient, and oil and grease extractables concentrations in Lake Couchiching surficial sediment samples.
Concentration units as noted. % = percent, g/kg = ppth; mg/kg = ppm. Except for particle size, all results are on dry weight basis.

Station Number	Sample Date	Field Sample Number	Moisture %	Coarse Sand 2000-1000 um %	Sand 1000-63 um %	Silt& Clay <63 um %	Residue, total loss on ign g/kg	Organic Carbon, total g/kg	Calcium, unf total mg/kg	Magnesium, unf total mg/kg	Chloride, aq extr mg/kg	Nitrogen, total Kjeldahl, unf react g/kg	Phosphorus, unf total g/kg
1	97/05/29	76812	65	0 04	41 28	58 68	57	***32***	210000	7000	70	***0.7***	***0.84***
2	"	76813	71	0 43	33 23	66 34	72	***39***	290000	3600	88	***4.3***	0 36
3	"	76814	71	0 18	33 32	66 50	66	***37***	310000	3200	74	***4.3***	0 32
4	"	76815	70	0 04	31 97	67 99	73	***37***	260000	5400	73	***3.8***	0 36
5	"	76816	71	0 06	29 03	70 90	78	***39***	260000	4500	73	***3.9***	0 40
6	"	76817	58	0 03	38 34	61 62	50	***27***	190000	4400	37	***2.2***	0 32
7	"	76818	71	0 16	28 76	71 09	78	***42***	290000	3400	100	***4 7***	0 26
8	"	76819	57	0 10	43 51	56 39	41	***21***	140000	2800	56	***2.4***	***0 64***
9	"	76820-R	52	0 03	22 56	77 41	32	***19***	140000	3100	40	***1.8***	0 50
"	"	76821-R	56	0 00	16 56	83 44	38	***20***	150000	3400	45	***2.1***	0 50
"	"	76822-R	56	0 00	21 74	78 26	39	***25***	160000	3200	44	***2.3***	0 46
10	97/05/30	76826	39	0 00	66 17	33 83	18	***12***	77000	1700	31	***1.1***	***0.64***
11	"	76827	64	0 07	28 25	71 68	49	***31***	250000	3300	60	***2.6***	0 28
12	"	76828	65	0 25	28 97	70 78	48	***26***	260000	2900	53	***4.9***	0 36
13	"	76829	41	0 67	70 07	29 26	18	7 0	100000	1800	30	***2.7***	0 24
14	97/06/02	76831	64	0 56	55 58	43 87	67	***33***	170000	8100	63	***2.8***	0 40
15	"	76830	67	0 12	45 16	54 72	74	***41***	240000	4900	81	***1.0***	0 62
16	"	76832	66	0 13	32 72	67 15	67	***35***	270000	3500	83	***3.1***	0 46
17	"	76833-R	70	0.19	33 02	66.79	70	***37***	260000	4600	68	***3.8***	0 28
"	"	76834-R	69	0 00	28 15	71 85	67	***40***	260000	4700	70	***3.4***	0 34
"	"	76835-R	69	0 08	29 63	70 30	69	***35***	260000	4700	61	***3.4***	0 32
18	97/05/29	76823	38	0 13	89 28	10 58	18	***10***	280000	2500	25	***1.1***	***0.60***
19	"	76824	64	0 71	23 38	75 91	66	***36***	280000	4200	110	***4.7***	0 42
20	"	76825	66	0 19	52 11	47 70	55	***29***	170000	4800	64	***3.3***	0 56
21	97/06/02	76836	58	0 18	47 58	52 24	42	***29***	160000	4000	47	***4.3***	0 36
Mean & Std Den'n			62 +/-10	0 17 +/-0 20	38 81 +/-17 01	61 01 +/-17 06	54 +/-19	***30*** +/-10	217480 +/-65857	3988 +/-1440	62 +/-22	***3.0*** +/-1 3	0 43 +/-0 15
PSQG-LEL			--	--	--	--	--	10	--	--	--	0 55	0 60
PSQG-SEL			--	--	--	--	--	100	--	--	--	4 8	2 00
OWDMDG			--	--	--	--	--	--	--	--	--	--	--

NOTES "<MDL" = less than method detection limit

"-R" = field spatial replicate

italicized and bolded values exceed Provincial Sediment Quality-LEL guideline for the protection of sediment-dwelling organisms or the Open Water Dredged Material Disposal Guideline, values in shaded cells exceed PSQ-SEL guideline

Table F-3. Macro-ion, nutrient, and oil and grease extractables concentrations in Lake Couchiching surficial sediment samples.
Concentration units as noted: % = percent, g/kg = ppth, mg/kg = ppm. Except for particle size, all results are on dry weight basis.

Station Number	Sample Date	Field Sample Number	Sulphur, total g/kg	Solvent Extractables mg/kg	Light Petroleum Hydrocarbons, mg/kg	Heavy Petroleum Hydrocarbons, mg/kg
1	97/05/29	76812	4 4	***1500***	100 <MDL	100 <MDL
2	"	76813	3 3	***2200***	100 <MDL	100 <MDL
3	"	76814	2 8	***1800***	100 <MDL	100 <MDL
4	"	76815	3 9	***1700***	100 <MDL	100 <MDL
5	"	76816	1 6	1200	100 <MDL	100 <MDL
6	"	76817	2 1	700	100 <MDL	100 <MDL
7	"	76818	3 0	***1700***	100 <MDL	100 <MDL
8	"	76819	1 9	960	100 <MDL	100 <MDL
9	"	76820-R	1 8	770	100 <MDL	100 <MDL
"	"	76821-R	1 7	810	100 <MDL	100 <MDL
"	"	76822-R	2 1	800	100 <MDL	100 <MDL
10	97/05/30	76826	1 1	370	100 <MDL	100 <MDL
11	"	76827	2 6	940	100 <MDL	100 <MDL
12	"	76828	2 2	1000	100 <MDL	100 <MDL
13	"	76829	0 97	380	100 <MDL	100 <MDL
14	97/06/02	76831	3 2	1300	100 <MDL	100 <MDL
15	"	76830	1 4	940	100 <MDL	100 <MDL
16	"	76832	2 6	1300	100 <MDL	100 <MDL
17	"	76833-R	1 5	690	100 <MDL	100 <MDL
"	"	76834-R	1 5	810	100 <MDL	100 <MDL
"	"	76835-R	1 5	820	100 <MDL	100 <MDL
18	97/05/29	76823	1 2	380	100 <MDL	100 <MDL
19	"	76824	1 7	1300	100 <MDL	100 <MDL
20	"	76825	2 5	***1500***	100 <MDL	100 <MDL
21	97/06/02	76836	2 2	990	100 <MDL	100 <MDL
Mean & Std Dev'n			2 2 +/-0 87	1074 +/-469	100 <MDL	100 <MDL
PSQG-LEL			--	--	--	--
PSQG-SEL			--	--	--	--
OWDMDG			--	1500	--	--

NOTES: "<MDL" = less than method detection limit

"-R" = field spatial replicate

italicized and bolded values exceed Provincial Sediment Quality-LEL guideline for the protection of sediment-dwelling organisms or the Open Water Dredged Material Disposal Guideline; values in shaded cells exceed PSQ-SEL guideline

Table F-4. Inorganics and heavy metal concentrations in Lake Couchiching surficial sediment samples.
All concentrations in mg/kg (ppm), dry weight.

Station Number	Sample Date	Field Sample Number	Aluminum	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Iron	Lead	Manganese	Mercury
1	97/05/29	76812	10000	0 8 <T	***9.5***	180	0 5 <=WE	***1.9***	***55***	21	***22***	16000	***58***	300	0 05
2	"	76813	3800	0 8 <T	2 8	130	0 5 <=WE	0 3 <TE	11	3 9	13	5300	***38***	210	0 04
3	"	76814	2900	0 3 <T	1 6	120	0 5 <=WE	***0.6*** <TE	8 0	2 6	8 0	4200	23	200	0 02
4	"	76815	3800	0 4 <T	2 2	110	0 5 <=WE	0 4 <TE	9 0	2 0 <TE	9 0	6100	27	230	0 02
5	"	76816	6700	0 5 <T	2 4	130	0 5 <=WE	***0.8*** <TE	16	3 1	12	8500	***38***	320	0 03
6	"	76817	3200	0 3 <T	1 9	80	0 5 <=WE	0 3 <TE	7 0	2 9	4 0 <TE	5400	14	180	0 02
7	"	76818	3200	0 3 <T	1 6	120	0 5 <=WE	0 5 <TE	7 0	1 6 <TE	7 0	4600	18	180	0 02
8	"	76819	3400	0 2 <=W	1 0	65	0 5 <=WE	0 3 <T	6 0	2 9	4 0 <T	5500	12	220	0 01
9	"	76820-R	3600	0 2 <=W	1 1	61	0 5 <=WE	0 3 <T	7 0	2 5	4 0 <T	5800	9 0 <T	200	0 01
"	"	76821-R	4000	0 2 <=W	1.1	66	0 5 <=WE	0 5 <T	8 0	2 4 <T	4 0 <T	6300	12	220	0 01
"	"	76822-R	3400	0 2 <=W	1 1	71	0 5 <=WE	0 2 <=WE	7 0	1 8 <TE	4 0 <TE	5600	9 0 <TE	200	0 01
10	97/05/30	76826	2700	0 2 <=W	0 7 <T	37	0 5 <=W	0 4 <T	6 0	2 1 <T	1 0 <=W	5400	9 0 <T	170	0 01
11	"	76827	3600	0 2 <=W	1 2	99	0 5 <=WE	0 3 <TE	7 0	1 7 <TE	5 0	6100	18	190	0 01
12	"	76828	2600	0 2 <=W	1 1	96	0 5 <=WE	0 4 <TE	6 0	1 5 <TE	3 0 <TE	4500	13	160	0 01
13	"	76829	2300	0 2 <=W	0 7 <T	40	0 5 <=W	0 2 <=W	5 0	1 3 <T	2 0 <T	4700	5 0 <T	140	0 01
14	97/06/02	76831	4000	0 3 <T	1 8	75	0 5 <=WE	0 4 <TE	8 0	2 0 <TE	6 0	7800	15	290	0 03
15	"	76830	8200	0 5 <T	2 1	130	0 5 <=WE	***0.7*** <TE	17	5 1	11	11000	***36***	400	0 04
16	"	76832	3200	0 2 <=W	1 3	110	0 5 <=WE	0 5 <TE	6 0	1 3 <TE	6 0	4800	13	210	0 02
17	"	76833-R	6500	0 4 <T	2 1	130	0 5 <=WE	***0.7*** <TE	13	3 0	10	8400	27	330	0 04
"	"	76834-R	6500	0 4 <T	2 2	130	0 5 <=WE	0 3 <TE	13	3 6	10	8400	27	330	0 03
"	"	76835-R	6700	0 3 <T	2 1	130	0 5 <=WE	0 4 <TE	13	3 9	10	8500	21	330	0 03
18	97/05/29	76823	5100	0 2 <=W	0 7 <T	54	0 5 <=WE	0 2 <=W	9 0	4 1	3 0 <T	9000	5 0 <T	140	0 01
19	"	76824	2900	0 3 <T	1.1	120	0 5 <=WE	0 4 <TE	7 0	1 8 <TE	8 0	4500	15	250	0 02
20	"	76825	4500	0 3 <T	1 6	83	0 5 <=WE	0 2 <=WE	10	4 2	7 0	7000	18	230	0 02
21	97/06/02	76836	2900	0 2 <=W	1.1	62	0 5 <=WE	0 2 <=WE	6 0	0 7 <TE	3 0 <TE	5500	14	180	0 01
Mean & Std Dev'n			4388 +/-1954	0 3 +/-0 2	1 8 +/-1 7	97 +/-35	0 5 <=WE	0 5 +/-0 3	11 +/-9 8	9 8 +/-3 8	7 0 +/-4 5	6756 +/-2605	20 +/-12	232 +/-69	0 02
PSQG-LEL			--	--	6	--	--	0 6	26	--	16	20000	31	460	0 2
PSQG-SEL			--	--	33	--	--	10	110	--	110	40000	250	1100	2 0
OWDMDG			--	--	--	--	--	--	--	50	--	--	--	--	[illegible]

NOTES blank or "--" indicates that data is not available for this parameter or sample
"-R" = field spatial replicate
"<T" = a measurable trace amount interpret with caution
"<=W" = no measurable response (zero) less than reported value
"<=TE" = a measurable trace after extra dilution or concentration caution
"<=WE" = no measurable response after extra dilution or concentration less than reported value
italicized and bolded values exceed Provincial Sediment Quality Lowest Effect Level Guideline for the protection of sediment-dwelling organisms

Table F-4. Inorganics and heavy metal concentrations in Lake Couchiching surficial sediment samples.
All concentrations in mg/kg (ppm), dry weight.

Station Number	Sample Date	Field Sample Number		Molybdenum		Nickel		Selenium		Strontium		Titanium		Vanadium		Zinc	
1	97/05/29	76812		1 5	<TE	***28***		0 7	<T	200		900		30		92	
2	"	76813	<T	1.0	<TE	7 5		0 9	<T	250		250		9 0		45	
3	"	76814	<T	0 5	<=WE	7 4		0 8	<T	260		190		8 0		32	
4	"	76815	<T	0 5	<=WE	8 4		0 8	<T	220		280		12		46	
5	"	76816	<T	0 5	<=WE	13		0 7	<T	220		420		16		55	
6	"	76817	<T	0 5	<=WE	5 3		0 4	<T	180		320		10		27	
7	"	76818	<T	0 5	<=WE	6 0		0 7	<T	250		200		8 0		32	
8	"	76819	<=W	0 5	<=W	4 3		0 3	<T	130		390		12		25	
9	"	76820-R	<=W	0 5	<=W	4 1		0 3	<T	130		490		12		22	<T
"	"	76821-R	<=W	0 5	<=W	5 3		0 3	<T	130		530		14		24	<T
"	"	76822-R	<=W	0 5	<=WE	4 9		0 4	<T	140		390		12		24	<TE
10	97/05/30	76826	<=W	0 5	<=W	3 4		0 2	<=W	74		570		13		15	<T
11	"	76827	<=W	0 5	<=WE	6 2		0 5	<T	220		400		13		26	
12	"	76828	<=W	0 5	<=WE	5 2		0 4	<T	220		270		10		20	<TE
13	"	76829	<=W	0 5	<=W	2 8		0 2	<=W	88		400		11		13	<T
14	97/06/02	76831	<T	0 8	<TE	7 1		0 5	<T	150		470		16		35	
15	"	76830	<T	0 5	<=WE	13		0 7	<T	200		550		21		61	
16	"	76832	<T	0 5	<=WE	5 5		0 6	<T	240		230		8 0		29	
17	"	76833-R	<T	0 6	<TE	9 9		0 5	<T	230		460		15		44	
"	"	76834-R	<T	0 5	<=WE	11		0 6	<T	230		450		16		45	
"	"	76835-R	<T	0 6	<TE	10		0 6	<T	230		490		16		45	
18	97/05/29	76823	<=W	0 5	<=W	5 8		0 2	<=W	35		640		19		23	<T
19	"	76824	<T	0 6	<TE	5 5		0 8	<T	250		200		8 0		31	
20	"	76825	<T	0 5	<=WE	6 8		0 4	<T	160		430		14		36	
21	97/06/02	76836	<=W	0 5	<=WE	4 5		0 3	<T	140		360		11		20	<TE
Mean & Std Dev'n			+/-0.01	0 6	+/-0 2	7.6	+/-5 1	0 5	+/-0 2	183	+/-62	411	+/-160	13	+/-4 9	35	+/-17
PSQG-LEL:				--		16		--		--		--		--		120	
PSQG-SEL:				--		75		--		--		--		--		820	
OWDMDG				--		--		--		--		--		--		--	

NOTES blank or "--" indicates that data is not available for this parameter or sample
"-R" = field spatial replicate
"<T" = a measurable trace amount interpret with caution
"<=W" = no measurable response (zero) less than reported value.
"<=TE" = a measurable trace after extra dilution or concentration: caution
"<=WE" = no measurable response after extra dilution or concentration less than reported value
italicized and bolded values exceed Provincial Sediment Quality Lowest Effect Level Guideline for the protection of sediment-dwelling organisms

Table F-5. Polycyclic aromatic hydrocarbons concentrations in Lake Couchiching surficial sediment samples.
All concentrations in ug/kg (ppb), dry weight.

Station Number	Sample Date	Field Sample Number	Acenaph-thene	Acenaph-thylene	Anthra-cene	Benzo(a)-anthra-cene	Benzo(b)-fluoran-thene	Benzo(k)-fluoran-thene	Benzo(g,h,i) -perylene	Benzo(a)-pyrene	Chrysene	Dibenzo-(a,h)anthra-cene	Fluoran-thene	Fluo-rene	Indeno-(1,2,3-cd)-pyrene	Naphth lene
1	97/05/29	76812	20 <=W	20 <=W	20 <=W	60 <T	140	100	120 <T	80 <T	80 <T	40 <=W	200	20 <=W	***240***	40
2	"	76813	20 <=W	20 <=W	20 <=W	40 <T	80 <T	40 <T	80 <T	80 <T	40 <T	40 <=W	120	20 <=W	120 <T	20
3	"	76814	20 <=W	20 <=W	20 <=W	20 <=W	40 <T	20 <=W	40 <=W	40 <=W	20 <=W	40 <=W	40 <T	20 <=W	80 <T	40
4	"	76815	20 <=W	20 <=W	20 <=W	20 <=W	60 <T	40 <T	40 <=W	40 <=W	40 <T	40 <=W	80 <T	20 <=W	80 <T	20
5	"	76816	20 <=W	20 <=W	20 <=W	20 <=W	60 <T	20 <=W	80 <T	40 <=W	20 <=W	40 <=W	40 <T	20 <=W	80 <T	20
6	"	76817	20 <=W	20 <=W	20 <=W	20 <=W	20 <=W	20 <=W	40 <=W	40 <=W	20 <=W	40 <=W	20 <=W	20 <=W	40 <=W	20
7	"	76818	20 <=W	20 <=W	20 <=W	20 <=W	20 <=W	20 <=W	40 <=W	40 <=W	20 <=W	40 <=W	20 <=W	20 <=W	40 <=W	20
8	"	76819	20 <=W	20 <=W	20 <=W	20 <=W	20 <=W	20 <=W	40 <=W	40 <=W	20 <=W	40 <=W	20 <=W	20 <=W	40 <=W	20
9	"	76820-R	20 <=W	20 <=W	20 <=W	20 <=W	20 <=W	20 <=W	40 <=W	40 <=W	20 <=W	40 <=W	20 <=W	20 <=W	40 <=W	20
"	"	76821-R	20 <=W	20 <=W	20 <=W	20 <=W	20 <=W	20 <=W	40 <=W	40 <=W	20 <=W	40 <=W	20 <=W	20 <=W	40 <=W	20
"	"	76822-R	20 <=W	20 <=W	20 <=W	20 <=W	20 <=W	20 <=W	40 <=W	40 <=W	20 <=W	40 <=W	20 <=W	20 <=W	40 <=W	20
10	97/05/30	76826	20 <=W	20 <=W	20 <=W	20 <=W	20 <=W	20 <=W	40 <=W	40 <=W	20 <=W	40 <=W	20 <=W	20 <=W	40 <=W	20
11	"	76827	20 <=W	20 <=W	20 <=W	20 <=W	20 <=W	20 <=W	40 <=W	40 <=W	20 <=W	40 <=W	20 <=W	20 <=W	40 <=W	20
12	"	76828	20 <=W	20 <=W	20 <=W	20 <=W	20 <=W	20 <=W	40 <=W	40 <=W	20 <=W	40 <=W	20 <=W	20 <=W	40 <=W	20
13	"	76829	20 <=W	20 <=W	20 <=W	20 <=W	20 <=W	20 <=W	40 <=W	40 <=W	20 <=W	40 <=W	20 <=W	20 <=W	40 <=W	20
14	97/06/02	76831	20 <=W	20 <=W	20 <=W	20 <=W	40 <T	20 <=W	40 <=W	40 <=W	20 <=W	40 <=W	20 <=W	20 <=W	40 <=W	20
15	"	76830	20 <=W	20 <=W	20 <=W	20 <=W	60 <T	20 <=W	40 <=W	40 <=W	20 <=W	40 <=W	40 <T	20 <=W	80 <T	20
16	"	76832	20 <=W	20 <=W	20 <=W	20 <=W	20 <=W	20 <=W	40 <=W	40 <=W	20 <=W	40 <=W	20 <=W	20 <=W	40 <=W	20
17	"	76833-R	20 <=W	20 <=W	20 <=W	20 <=W	40 <T	20 <=W	40 <=W	40 <=W	20 <=W	40 <=W	20 <=W	20 <=W	40 <=W	20
"	"	76834-R	20 <=W	20 <=W	20 <=W	20 <=W	20 <=W	20 <=W	40 <=W	40 <=W	20 <=W	40 <=W	20 <=W	20 <=W	40 <=W	20
"	"	76835-R	20 <=W	20 <=W	20 <=W	20 <=W	20 <=W	20 <=W	40 <=W	40 <=W	20 <=W	40 <=W	20 <=W	20 <=W	40 <=W	20
18	97/05/29	76823	20 <=W	20 <=W	20 <=W	20 <=W	20 <=W	20 <=W	40 <=W	40 <=W	20 <=W	40 <=W	20 <=W	20 <=W	40 <=W	40
19	"	76824	20 <=W	20 <=W	20 <=W	20 <=W	40 <T	20 <=W	40 <=W	40 <=W	20 <=W	40 <=W	20 <=W	20 <=W	40 <=W	40
20	"	76825	20 <=W	20 <=W	20 <=W	20 <=W	40 <T	20 <=W	40 <=W	40 <=W	20 <=W	40 <=W	40 <T	20 <=W	40 <=W	20
21	97/06/02	76836	20 <=W	20 <=W	20 <=W	20 <=W	20 <=W	20 <=W	40 <=W	40 <=W	20 <=W	40 <=W	20 <=W	20 <=W	40 <=W	20
PSQG-LEL:			--	--	220	320	--	240	170	370	340	60	750	190	200	--
PSQG-SEL.			--	--	370000	1480000	--	1340000	320000	1440000	460000	130000	1020000	160000	32000	--

NOTE "<T" = a measurable trace amount interpret with caution
"<=W" = no measurable response (zero) less than reported value
"-R" = field spatial replicate
italicized and bolded values exceed Provincial Sediment Quality Lowest Effect Level Guideline for the protection of sediment-dwelling organisms

Table F-5. Polycyclic aromatic hydrocarbons concentrations in Lake Couchiching surficial sediment samples.
All concentrations in ug/kg (ppb), dry weight.

Station Number	Sample Date	Field Sample Number		Phenanthrene		Pyrene		Total of 16 PAHs
1	97/05/29	76812	<T	80	<T	180		1320
2	"	76813	<=W	60	<T	100		760
3	"	76814	<T	20	<=W	40	<T	240
4	"	76815	<=W	40	<T	60	<T	400
5	"	76816	<=W	20	<=W	40	<T	300
6	"	76817	<=W	20	<=W	20	<=W	0
7	"	76818	<=W	20	<=W	20	<=W	0
8	"	76819	<=W	20	<=W	20	<=W	0
9	"	76820-R	<=W	20	<=W	20	<=W	0
"	"	76821-R	<=W	20	<=W	20	<=W	0
"	"	76822-R	<=W	20	<=W	20	<=W	0
10	97/05/30	76826	<=W	20	<=W	20	<=W	0
11	"	76827	<=W	20	<=W	20	<=W	0
12	"	76828	<=W	20	<=W	20	<=W	0
13	"	76829	<=W	20	<=W	20	<=W	0
14	97/06/02	76831	<=W	20	<=W	20	<=W	40
15	"	76830	<=W	20	<=W	40	<T	220
16	"	76832	<=W	20	<=W	20	<=W	0
17	"	76833-R	<=W	20	<=W	20	<=W	40
"	"	76834-R	<=W	20	<=W	20	<=W	0
"	"	76835-R	<=W	20	<=W	20	<=W	0
18	97/05/29	76823	<T	20	<=W	20	<=W	40
19	"	76824	<T	20	<=W	20	<=W	80
20	"	76825	<=W	20	<=W	40	<T	120
21	97/06/02	76836	<=W	20	<=W	20	<=W	0
PSQG-LEL				560		490		4000
PSQG-SEL:				950000		850000		10000

NOTE "<T" = a measurable trace amount interpret with caution
"<=W" = no measurable response (zero) less than reported value
"-R" = field spatial replicate
italicized and bolded values exceed Provincial Sediment Quality Lowest Effect Level Guideline for the protection of sediment-dwelling organisms

Table F-6. Polychlorinated dibenzo-p-dioxins and dibenzofurans in Lake Couchiching surficial sediment samples.
All concentrations in ng/kg (ppt), dry weight.

Station Number	Sample Date	Field Sample Number	TetraCDF		TetraCDD		PentaCDF		PentaCDD		HexaCDF		HexaCDD		HeptaCDF		HeptaCDD		OctaCDF	OctaCDD	2,3,7,8-TetraCDF		2,3,7,8-TetraCDD	1,2,3,7,8-PentaCDF
2	*	76813	19	(17)	1 0	<	32	(13)	5 6	(5)	23	(7)	24	(8)	17	(2)	59	(2)	13	150	2 6		1.0	1 4

Station Number	Sample Date	Field Sample Number	2,3,4,7,8-PentaCDF	1,2,3,7,8-PentaCDD	1,2,3,4,7,8-HexaCDF	1,2,3,6,7,8-HexaCDF	2,3,4,6,7,8-HexaCDF	1,2,3,7,8,9-HexaCDF		1,2,3,4,7,8-HexaCDF	1,2,3,6,7,8-HexaCDD	1,2,3,7,8,9-HexaCDD	1,2,3,4,6,7,8-HeptaCDF	1,2,3,4,7,8,9-HeptaCDF		1,2,3,4,6,7,8-HeptaCDD	Total 2,3,7,8-TetraCDD TEQ
2	*	76813	1 7	1 5	2 2	1.7	1 8	1 0	<	1 3	2 3	2 6	8 3	1 0	<	29	4 3

NOTE: "<" = not detected at indicated detection limit

Table F-7. Organochlorine pesticides concentrations in Lake Couchiching surficial sediment samples.
All concentrations in ug/kg (ppb), dry weight

Station Number	Sample Date	Field Sample Number	Aldrin	alpha-BHC	beta-BHC	gamma-BHC	alpha-Chlordane	gamma-Chlordane	Dieldrin	p,p'-DDD	p,p'-DDE	o,p-DDT	p,p'-DDT	alpha-Endosulfan	beta-Endosulfan	Endosulfan sulphate	Endrin
1	97/05/29	76812	1 <=W	1 <=W	1 <=W	1 <=W	2 <=W	2 <=W	2 <=W	5 <=W	1 <=W	5 <=W	5 <=W	2 <=W	4 <=W	4 <=W	4 <=W
2	"	76813	1 <=W	1 <=W	1 <=W	1 <=W	2 <=W	2 <=W	2 <=W	5 <=W	1 <=W	5 <=W	5 <=W	2 <=W	4 <=W	4 <=W	4 <=W
3	"	76814	1 <=W	1 <=W	1 <=W	1 <=W	2 <=W	2 <=W	2 <=W	5 <=W	1 <=W	5 <=W	5 <=W	2 <=W	4 <=W	4 <=W	4 <=W
4	"	76815	1 <=W	1 <=W	1 <=W	1 <=W	2 <=W	2 <=W	2 <=W	5 <=W	1 <=W	5 <=W	5 <=W	2 <=W	4 <=W	4 <=W	4 <=W
5	"	76816	1 <=W	1 <=W	1 <=W	1 <=W	2 <=W	2 <=W	2 <=W	5 <=W	1 <=W	5 <=W	5 <=W	2 <=W	4 <=W	4 <=W	4 <=W
6	"	76817	1 <=W	1 <=W	1 <=W	1 <=W	2 <=W	2 <=W	2 <=W	5 <=W	1 <=W	5 <=W	5 <=W	2 <=W	4 <=W	4 <=W	4 <=W
7	"	76818	1 <=W	1 <=W	1 <=W	1 <=W	2 <=W	2 <=W	2 <=W	5 <=W	1 <=W	5 <=W	5 <=W	2 <=W	4 <=W	4 <=W	4 <=W
8	"	76819	1 <=W	1 <=W	1 <=W	1 <=W	2 <=W	2 <=W	2 <=W	5 <=W	1 <=W	5 <=W	5 <=W	2 <=W	4 <=W	4 <=W	4 <=W
9	"	76820-R	1 <=W	1 <=W	1 <=W	1 <=W	2 <=W	2 <=W	2 <=W	5 <=W	1 <=W	5 <=W	5 <=W	2 <=W	4 <=W	4 <=W	4 <=W
"	"	76821-R	1 <=W	1 <=W	1 <=W	1 <=W	2 <=W	2 <=W	2 <=W	5 <=W	1 <=W	5 <=W	5 <=W	2 <=W	4 <=W	4 <=W	4 <=W
"	"	76822-R	1 <=W	1 <=W	1 <=W	1 <=W	2 <=W	2 <=W	2 <=W	5 <=W	1 <=W	5 <=W	5 <=W	2 <=W	4 <=W	4 <=W	4 <=W
10	97/05/30	76826	1 <=W	1 <=W	1 <=W	1 <=W	2 <=W	2 <=W	2 <=W	5 <=W	1 <=W	5 <=W	5 <=W	2 <=W	4 <=W	4 <=W	4 <=W
11	"	76827	1 <=W	1 <=W	1 <=W	1 <=W	2 <=W	2 <=W	2 <=W	5 <=W	1 <=W	5 <=W	5 <=W	2 <=W	4 <=W	4 <=W	4 <=W
12	"	76828	1 <=W	1 <=W	1 <=W	1 <=W	2 <=W	2 <=W	2 <=W	5 <=W	1 <=W	5 <=W	5 <=W	2 <=W	4 <=W	4 <=W	4 <=W
13	"	76829	1 <=W	1 <=W	1 <=W	1 <=W	2 <=W	2 <=W	2 <=W	5 <=W	1 <=W	5 <=W	5 <=W	2 <=W	4 <=W	4 <=W	4 <=W
14	97/06/02	76831	1 <=W	1 <=W	1 <=W	1 <=W	2 <=W	2 <=W	2 <=W	5 <=W	1 <=W	5 <=W	5 <=W	2 <=W	4 <=W	4 <=W	4 <=W
15	"	76830	1 <=W	1 <=W	1 <=W	1 <=W	2 <=W	2 <=W	2 <=W	5 <=W	1 <=W	5 <=W	5 <=W	2 <=W	4 <=W	4 <=W	4 <=W
16	"	76832	1 <=W	1 <=W	1 <=W	1 <=W	2 <=W	2 <=W	2 <=W	5 <=W	1 <=W	5 <=W	5 <=W	2 <=W	4 <=W	4 <=W	4 <=W
17	"	76833-R	1 <=W	1 <=W	1 <=W	1 <=W	2 <=W	2 <=W	2 <=W	5 <=W	1 <=W	5 <=W	5 <=W	2 <=W	4 <=W	4 <=W	4 <=W
"	"	76834-R	1 <=W	1 <=W	1 <=W	1 <=W	2 <=W	2 <=W	2 <=W	5 <=W	1 <=W	5 <=W	5 <=W	2 <=W	4 <=W	4 <=W	4 <=W
"	"	76835-R	1 <=W	1 <=W	1 <=W	1 <=W	2 <=W	2 <=W	2 <=W	5 <=W	1 <=W	5 <=W	5 <=W	2 <=W	4 <=W	4 <=W	4 <=W
18	97/05/29	76823	1 <=W	1 <=W	1 <=W	1 <=W	2 <=W	2 <=W	2 <=W	5 <=W	1 <=W	5 <=W	5 <=W	2 <=W	4 <=W	4 <=W	4 <=W
19	"	76824	1 <=W	1 <=W	1 <=W	1 <=W	2 <=W	2 <=W	2 <=W	5 <=W	1 <=W	5 <=W	5 <=W	2 <=W	4 <=W	4 <=W	4 <=W
20	"	76825	1 <=W	1 <=W	1 <=W	1 <=W	2 <=W	2 <=W	2 <=W	5 <=W	1 <=W	5 <=W	5 <=W	2 <=W	4 <=W	4 <=W	4 <=W
21	97/06/02	76836	1 <=W	1 <=W	1 <=W	1 <=W	2 <=W	2 <=W	2 <=W	5 <=W	1 <=W	5 <=W	5 <=W	2 <=W	4 <=W	4 <=W	4 <=W
PSQG-LEL			2	6	5	3	7 *	7 *	2	8	5	8 **	8 **	--	--	--	3
PSQG-SEL			8000	10000	21000	-1000	6000 *	6000 *	91000	6000	19000	71000 **	71000 **	--	--	--	130000

NOTE "<=W" = no measurable response (zero) less than reported value, "<T" = a measurable trace amount interpret with caution

"-R" = field spatial replicate

"PSQG-LEL" & "PSQG-SEL" = Provincial Sediment Quality-Lowest Effect Level & Severe Effect Level guidelines for the protection of sediment-dwelling organisms

' * ' = guideline is for sum of the two Chlordane isomers

' ** ' = guideline is for sum of the two DDT isomers

Table F-7. Organochlorine pesticides concentrations in Lake Couchiching surficial sediment samples.
All concentrations in $\mu g/kg$ (ppb), dry weight

Station Number	Sample Date	Field Sample Number	Hepta-chlor		Hepta-chlor Epoxide		Metho-xychlor		Mirex		Oxy-chlor-dane	
1	97/05/29	76812	1	<=W	1	<=W	5	<=W	5	<=W	2	<=W
2	"	76813	1	<=W	1	<=W	5	<=W	5	<=W	2	<=W
3	"	76814	1	<=W	1	<=W	5	<=W	5	<=W	2	<=W
4	"	76815	1	<=W	1	<=W	5	<=W	5	<=W	2	<=W
5	"	76816	1	<=W	1	<=W	5	<=W	5	<=W	2	<=W
6	"	76817	1	<=W	1	<=W	5	<=W	5	<=W	2	<=W
7	"	76818	1	<=W	1	<=W	5	<=W	5	<=W	2	<=W
8	"	76819	1	<=W	1	<=W	5	<=W	5	<=W	2	<=W
9	"	76820-R	1	<=W	1	<=W	5	<=W	5	<=W	2	<=W
"	"	76821-R	1	<=W	1	<=W	5	<=W	5	<=W	2	<=W
"	"	76822-R	1	<=W	1	<=W	5	<=W	5	<=W	2	<=W
10	97/05/30	76826	1	<=W	1	<=W	5	<=W	5	<=W	2	<=W
11	"	76827	1	<=W	1	<=W	5	<=W	5	<=W	2	<=W
12	"	76828	1	<=W	1	<=W	5	<=W	5	<=W	2	<=W
13	"	76829	1	<=W	1	<=W	5	<=W	5	<=W	2	<=W
14	97/06/02	76831	1	<=W	1	<=W	5	<=W	5	<=W	2	<=W
15	"	76830	1	<=W	1	<=W	5	<=W	5	<=W	2	<=W
16	"	76832	1	<=W	1	<=W	5	<=W	5	<=W	2	<=W
17	"	76833-R	1	<=W	1	<=W	5	<=W	5	<=W	2	<=W
"	"	76834-R	1	<=W	1	<=W	5	<=W	5	<=W	2	<=W
"	"	76835-R	1	<=W	1	<=W	5	<=W	5	<=W	2	<=W
18	97/05/29	76823	1	<=W	1	<=W	5	<=W	5	<=W	2	<=W
19	"	76824	1	<=W	1	<=W	5	<=W	5	<=W	2	<=W
20	"	76825	1	<=W	1	<=W	5	<=W	5	<=W	2	<=W
21	97/06/02	76836	1	<=W	1	<=W	5	<=W	5	<=W	2	<=W
PSQG-LEL:			--		5		--		7		--	
PSQG-SEL:			--		5000		--		130000		--	

NOTE "<=W" = no measurable response (zero) less than reported value, "<T" = a measurable trace amount interpret with caution

"-R" = field spatial replicate

"PSQG-LEL" & "PSQG-SEL" = Provincial Sediment Quality-Lowest Effect Level & Severe Effect Level guidelines for the protection of sediment-dwelling organisms

' * ' = guideline is for sum of the two Chlordane isomers

' ** ' = guideline is for sum of the two DDT isomers

Table F-8. Chlorinated aliphatics, aromatics and biphenyls concentrations in Lake Couchiching surficial sediment samples.
All concentrations in ug/kg (ppb), dry weight

Station Number	Sample Date	Field Sample Number	Hexa-chloro-ethane	Hexa-chloro-butadiene	2,3,6-Trichloro-toluene	2,4,5-Trichloro-toluene	2,6,a-Trichloro-toluene	1,2,3-Trichloro-benzene	1,2,4-Trichloro-benzene	1,3,5-Trichloro-benzene	1,2,3,4-Tetrachloro-robenzene	1,2,3,5-Tetrachloro-robenzene	1,2,4,5-Tetrachloro-robenzene	Penta-chloro-benzene	Hexa-chloro-benzene	Octa-chloro-styrene	Total PCBs
1	97/05/29	76812	1 <=W	1 <=W	1 <=W	1 <=W	1 <=W	2 <=W	2 <=W	2 <=W	1 <=W	1 <=W	1 <=W	1 <=W	1 <=W	1 <=W	20 <=W
2	"	76813	1 <=W	1 <=W	1 <=W	1 <=W	1 <=W	2 <=W	2 <=W	2 <=W	1 <=W	1 <=W	1 <=W	1 <=W	1 <=W	1 <=W	20 <=W
3	"	76814	1 <=W	1 <=W	1 <=W	1 <=W	1 <=W	2 <=W	2 <=W	2 <=W	1 <=W	1 <=W	1 <=W	1 <=W	1 <=W	1 <=W	20 <=W
4	"	76815	1 <=W	1 <=W	1 <=W	1 <=W	1 <=W	2 <=W	2 <=W	2 <=W	1 <=W	1 <=W	1 <=W	1 <=W	1 <=W	1 <=W	20 <=W
5	"	76816	1 <=W	1 <=W	1 <=W	1 <=W	1 <=W	2 <=W	2 <=W	2 <=W	1 <=W	1 <=W	1 <=W	1 <=W	1 <=W	1 <=W	20 <=W
6	"	76817	1 <=W	1 <=W	1 <=W	1 <=W	1 <=W	2 <=W	2 <=W	2 <=W	1 <=W	1 <=W	1 <=W	1 <=W	1 <=W	1 <=W	20 <=W
7	"	76818	1 <=W	1 <=W	1 <=W	1 <=W	1 <=W	2 <=W	2 <=W	2 <=W	1 <=W	1 <=W	1 <=W	1 <=W	1 <=W	1 <=W	20 <=W
8	"	76819	1 <=W	1 <=W	1 <=W	1 <=W	1 <=W	2 <=W	2 <=W	2 <=W	1 <=W	1 <=W	1 <=W	1 <=W	1 <=W	1 <=W	20 <=W
9	"	76820-R	1 <=W	1 <=W	1 <=W	1 <=W	1 <=W	2 <=W	2 <=W	2 <=W	1 <=W	1 <=W	1 <=W	1 <=W	1 <=W	1 <=W	20 <=W
"	"	76821-R	1 <=W	1 <=W	1 <=W	1 <=W	1 <=W	2 <=W	2 <=W	2 <=W	1 <=W	1 <=W	1 <=W	1 <=W	1 <=W	1 <=W	20 <=W
"	"	76822-R	1 <=W	1 <=W	1 <=W	1 <=W	1 <=W	2 <=W	2 <=W	2 <=W	1 <=W	1 <=W	1 <=W	1 <=W	1 <=W	1 <=W	20 <=W
10	97/05/30	76826	1 <=W	1 <=W	1 <=W	1 <=W	1 <=W	2 <=W	2 <=W	2 <=W	1 <=W	1 <=W	1 <=W	1 <=W	1 <=W	1 <=W	20 <=W
11	"	76827	1 <=W	1 <=W	1 <=W	1 <=W	1 <=W	2 <=W	2 <=W	2 <=W	1 <=W	1 <=W	1 <=W	1 <=W	1 <=W	1 <=W	20 <=W
12	"	76828	1 <=W	1 <=W	1 <=W	1 <=W	1 <=W	2 <=W	2 <=W	2 <=W	1 <=W	1 <=W	1 <=W	1 <=W	1 <=W	1 <=W	20 <=W
13	"	76829	1 <=W	1 <=W	1 <=W	1 <=W	1 <=W	2 <=W	2 <=W	2 <=W	1 <=W	1 <=W	1 <=W	1 <=W	1 <=W	1 <=W	20 <=W
14	97/06/02	76831	1 <=W	1 <=W	1 <=W	1 <=W	1 <=W	2 <=W	2 <=W	2 <=W	1 <=W	1 <=W	1 <=W	1 <=W	1 <=W	1 <=W	20 <=W
15	"	76830	1 <=W	1 <=W	1 <=W	1 <=W	1 <=W	2 <=W	2 <=W	2 <=W	1 <=W	1 <=W	1 <=W	1 <=W	1 <=W	1 <=W	20 <=W
16	"	76832	1 <=W	1 <=W	1 <=W	1 <=W	1 <=W	2 <=W	2 <=W	2 <=W	1 <=W	1 <=W	1 <=W	1 <=W	1 <=W	1 <=W	20 <=W
17	"	76833-R	1 <=W	1 <=W	1 <=W	1 <=W	1 <=W	2 <=W	2 <=W	2 <=W	1 <=W	1 <=W	1 <=W	1 <=W	1 <=W	1 <=W	20 <=W
"	"	76834-R	1 <=W	1 <=W	1 <=W	1 <=W	1 <=W	2 <=W	2 <=W	2 <=W	1 <=W	1 <=W	1 <=W	1 <=W	1 <=W	1 <=W	20 <=W
"	"	76835-R	1 <=W	1 <=W	1 <=W	1 <=W	1 <=W	2 <=W	2 <=W	2 <=W	1 <=W	1 <=W	1 <=W	1 <=W	1 <=W	1 <=W	20 <=W
18	97/05/29	76823	1 <=W	1 <=W	1 <=W	1 <=W	1 <=W	2 <=W	2 <=W	2 <=W	1 <=W	1 <=W	1 <=W	1 <=W	1 <=W	1 <=W	20 <=W
19	"	76824	1 <=W	1 <=W	1 <=W	1 <=W	1 <=W	2 <=W	2 <=W	2 <=W	1 <=W	1 <=W	1 <=W	1 <=W	1 <=W	1 <=W	20 <=W
20	"	76825	1 <=W	1 <=W	1 <=W	1 <=W	1 <=W	2 <=W	2 <=W	2 <=W	1 <=W	1 <=W	1 <=W	1 <=W	1 <=W	1 <=W	20 <=W
21	97/06/02	76836	1 <=W	1 <=W	1 <=W	1 <=W	1 <=W	2 <=W	2 <=W	2 <=W	1 <=W	1 <=W	1 <=W	1 <=W	1 <=W	1 <=W	20 <=W
PSQG-LEL			--	--	--	--	--	--	--	--	--	--	--	--	20	--	70
PSQG-SEL			--	--	--	--	--	--	--	--	--	--	--	--	24000	--	530000

NOTE "<=W" = no measurable response (zero) less than reported value, "<T" = a measurable trace amount interpret with caution
"-R" = field spatial replicate

Table F-9. Phenoxy acid herbicides and chlorinated phenols concentrations in Lake Couchiching surficial sediment samples.
All concentrations in ug/kg (ppb), dry weight

Station Number	Sample Date	Field Sample Number	Dicamba	2,4-D	2,4-DB	2,4-D Propionic Acid	2,4,5-T	Picloram	Silvex	2,3,4-Trichlorphenol	2,4,5-Trichlorphenol	2,4,6-Trichlorphenol	2,3,4,5-Tetrachlorophenol	2,3,5,6-Tetrachlorophenol	Pentachlorophenol
1	97/05/29	76812	100 <=W	100 <=W	200 <=W	100 <=W	50 <=W	100 <=W	50 <=W	10 <=W	20 <=W	10 <=W	10 <=W	5 <=W	5 <=W
2	"	76813	100 <=W	100 <=W	200 <=W	100 <=W	50 <=W	100 <=W	50 <=W	10 <=W	20 <=W	10 <=W	10 <=W	5 <=W	5 <=W
3	"	76814	100 <=W	100 <=W	200 <=W	100 <=W	50 <=W	100 <=W	50 <=W	10 <=W	20 <=W	10 <=W	10 <=W	5 <=W	5 <=W
4	"	76815	100 <=W	100 <=W	200 <=W	100 <=W	50 <=W	100 <=W	50 <=W	10 <=W	20 <=W	10 <=W	10 <=W	5 <=W	5 <=W
5	"	76816	100 <=W	100 <=W	200 <=W	100 <=W	50 <=W	100 <=W	50 <=W	10 <=W	20 <=W	10 <=W	10 <=W	5 <=W	5 <=W
6	"	76817	100 <=W	100 <=W	200 <=W	100 <=W	50 <=W	100 <=W	50 <=W	10 <=W	20 <=W	10 <=W	10 <=W	5 <=W	5 <=W
7	"	76818	100 <=W	100 <=W	200 <=W	100 <=W	50 <=W	100 <=W	50 <=W	10 <=W	20 <=W	10 <=W	10 <=W	5 <=W	5 <=W
8	"	76819	100 <=W	100 <=W	200 <=W	100 <=W	50 <=W	100 <=W	50 <=W	10 <=W	20 <=W	10 <=W	10 <=W	5 <=W	5 <=W
9	"	76820	100 <=W	100 <=W	200 <=W	100 <=W	50 <=W	100 <=W	50 <=W	10 <=W	20 <=W	10 <=W	10 <=W	5 <=W	5 <=W
"	"	76821	--	--	--	--	--	--	--	--	--	--	--	--	--
"	"	76822	--	--	--	--	--	--	--	--	--	--	--	--	--
10	97/05/30	76826	100 <=W	100 <=W	200 <=W	100 <=W	50 <=W	100 <=W	50 <=W	10 <=W	20 <=W	10 <=W	10 <=W	5 <=W	5 <=W
11	"	76827	100 <=W	100 <=W	200 <=W	100 <=W	50 <=W	100 <=W	50 <=W	10 <=W	20 <=W	10 <=W	10 <=W	5 <=W	5 <=W
12	"	76828	100 <=W	100 <=W	200 <=W	100 <=W	50 <=W	100 <=W	50 <=W	10 <=W	20 <=W	10 <=W	10 <=W	5 <=W	5 <=W
13	"	76829	100 <=W	100 <=W	200 <=W	100 <=W	50 <=W	100 <=W	50 <=W	10 <=W	20 <=W	10 <=W	10 <=W	5 <=W	5 <=W
14	97/06/02	76831	100 <=W	100 <=W	200 <=W	100 <=W	50 <=W	100 <=W	50 <=W	10 <=W	20 <=W	10 <=W	10 <=W	5 <=W	5 <=W
15	"	76830	100 <=W	100 <=W	200 <=W	100 <=W	50 <=W	100 <=W	50 <=W	10 <=W	20 <=W	10 <=W	10 <=W	5 <=W	5 <=W
16	"	76832	100 <=W	100 <=W	200 <=W	100 <=W	50 <=W	100 <=W	50 <=W	10 <=W	20 <=W	10 <=W	10 <=W	5 <=W	5 <=W
17	"	76833	100 <=W	100 <=W	200 <=W	100 <=W	50 <=W	100 <=W	50 <=W	10 <=W	20 <=W	10 <=W	10 <=W	5 <=W	5 <=W
"	"	76834	--	--	--	--	--	--	--	--	--	--	--	--	--
"	"	76835	--	--	--	--	--	--	--	--	--	--	--	--	--
18	97/05/29	76823	100 <=W	100 <=W	200 <=W	100 <=W	50 <=W	100 <=W	50 <=W	10 <=W	20 <=W	10 <=W	10 <=W	5 <=W	5 <=W
19	"	76824	100 <=W	100 <=W	200 <=W	100 <=W	50 <=W	100 <=W	50 <=W	10 <=W	20 <=W	10 <=W	10 <=W	5 <=W	5 <=W
20	"	76825	100 <=W	100 <=W	200 <=W	100 <=W	50 <=W	100 <=W	50 <=W	10 <=W	20 <=W	10 <=W	10 <=W	5 <=W	5 <=W
21	97/06/02	76836	100 <=W	100 <=W	200 <=W	100 <=W	50 <=W	100 <=W	50 <=W	10 <=W	20 <=W	10 <=W	10 <=W	5 <=W	5 <=W

NOTES: blank or "--" indicates that data is not available for this parameter or sample
"<=W" = no measurable response (zero) less than reported value

Appendix G

Appendix G - Phytoplankton Data

List of Tables

Table G-1. List of phytoplankton genera collected from Lake Couchiching during 1997.

Table G-2. Seasonal phytoplankton trends and comparative phytoplankton data between stations in Lake Couchiching

Table G-1. List of phytoplankton genera collected from Lake Couchiching during 1997.

Cyanophytes	**Chrysophytes**
Anabaena	Chromulina
Aphanothece	Chrysidiastrum
Chroococcus	Chrysocromulina parva
Microcystis	Chrysolykos
Oscillatoria	Chrysophyte unid.
	Chrysophyte unid.
Dinophytes	Chrysophyte unid.
Gymnodium	Codonocladium
Peridinium	Dinobryon
	Dinobryon cysts
Cryptophytes	Epipyxis
Cryptomonas	Kephyrion
Katablepharis	Mallomonas
Rhodomonas	Ochromonas
	Pseudokephyrion
Chlorophytes	Salpingoeca
Botryococcus	Spiniferomonas
Chlamydomonas	Uroglena
Chlorella	
Coelastrum	**Bacillariophytes**
Cosmarium	Achnanthes
Dictyosphaerium	Amphora
Gloecystis	Asterionella
Gloeotila	cocconeis
Golenkinia	Cyclotella
Green unid.	Cymbella
Micractinium	Diatoma
Oocystis	Fragilaria
Pediastrum	Navicula
Pedimonas	Nitzschia
Scenedesmus	Rhizoselenia
Stichococcus	Rhoicosphenia
Tetraedron	Stephanodiscus
	Synedra

Table G-2. Seasonal phytoplankton trends and comparative phytoplankton data between stations in Lake Couchiching

(a) Seasonal phytoplankton trends showing community composition for the (central) Station 5 in Lake Couchiching. 1997. Data are volumes of plankton (μm^3/ml x 1000)

Date	Cyano	Dino	Crypto	Eugleno	Chryso	Chloro	Bacill	Total
03-Jun-97	0	0	21	0	560	1	10	592
17-Jun-97	1	2	10	0	45	5	7	70
08-Jul-97	0	17	10	0	84	2	12	125
22-Jul-97	7	11	12	0	508	5	23	566
07-Aug-97	8	13	6	0	36	21	93	177
22-Aug-97	11	8	3	0	25	5	271	323
10-Sep-97	1	0	8	0	75	0	204	288
25-Sep-97	3	1	19	0	28	3	51	105
07-Oct-97	14	0	15	0	93	7	180	309
23-Oct-97	0	3	26	0	72	1	65	167

(b) Phytoplankton community composition as a percentage of total biovolume at Station 5. Lake Couchiching. 1997.

Date	Cyano	Dino	Crypto	Eugleno	Chryso	Chloro	Bacill	Total
03-Jun-97	0.0	0.0	3.5	0.0	94.6	0.2	1.7	100
17-Jun-97	1.4	2.9	14.3	0.0	64.3	7.1	10.0	100
08-Jul-97	0.0	13.6	8.0	0.0	67.2	1.6	9.6	100
22-Jul-97	1.2	1.9	2.1	0.0	89.8	0.9	4.1	100
07-Aug-97	4.5	7.3	3.4	0.0	20.3	11.9	52.5	100
22-Aug-97	3.4	2.5	0.9	0.0	7.7	1.5	83.9	100
10-Sep-97	0.3	0.0	2.8	0.0	26.0	0.0	70.8	100
25-Sep-97	2.9	1.0	18.1	0.0	26.7	2.9	48.6	100
07-Oct-97	4.5	0.0	4.9	0.0	30.1	2.3	58.3	100
23-Oct-97	0.0	1.8	15.6	0.0	43.1	0.6	38.9	100

(c) Seasonal euphotic zone. average algal composition from the four L. Couchiching stations. 1997. (Calculated from recombined samples between June 3 and (μm^3/mlx1000)

Station	Cyano	Dino	Crypto	Eugleno	Chryso	Chloro	Bacill	Total
Station 5	4.5	5.5	13.0	0.0	152.6	5.0	91.6	272.2
Station 12	3.0	5.0	3.0	0.0	51.0	5.0	25.0	92.0
Station 15	16.0	20.0	8.0	0.0	142.0	2.0	142.0	330.0
Station 21	2.0	8.0	11.0	0.0	74.0	2.0	43.0	140.0

(d) Seasonal euphotic zone, algal compostion as a % of total biovolume from the four Lake Couchiching Stations (Calculated from recombined samples between June 3 and Oct 23/97).

Station	Cyano	Dino	Crypto	Eugleno	Chryso	Chloro	Bacill	Total
Station 5	1.653196	2.020573	4.7759	0	56.06172	1.836885	33.65173	100
Station 12	3.26087	5.434783	3.26087	0	55.43478	5.434783	27.17391	100
Station 15	4.848485	6.060606	2.424242	0	43.0303	0.606061	43.0303	100
Station 21	1.428571	5.714286	7.857143	0	52.85714	1.428571	30.71429	100

Appendix H

Appendix H - Zooplankton Data

List of Tables

Table H-1. List of common limnetic zooplankton from Lake Couchiching, 1997.

Table H-2. Seasonal zooplankton succession expressed as a biomass (mg/m^3) in Lake Couchiching, 1997

Table H-3. Seasonal zooplankton succession density trends ($\#/m^3$) from Lake Couchiching, 1997

Table H-4. Seasonal zooplankton length (μm) trends in Lake Couchiching, 1997.

Table H-1. List of common limnetic zooplankton from Lake Couchiching, 1997.

Cladocerans

Acroperus harpae
Bosmina longirostris
Chydorus sphaericus
Daphnia galeata mendotae
Daphnia tetrocurva
Diaptomus birgeii
Bosmina coregonii
Holopedium gibberum

Calanoid Copepods

Calanoid copepodid
Leptodiaptomus minutus
Skistodiaptomus oregonensis
Epischura lacustris
Epischura lacustris copepodid
Calanoid nauplii

Cyclopoid Copepods

Cyclopoid copepodid
Diacyclops thomasii
Eucyclops serrulatus
Mesocyclops edax
Tropocyclops extensus
Cyclopoid nauplii

Dreissenidae (Bivalvia) = Zebra mussels

veliger larvae

Table H-2: The Seasonal zooplankton succession expressed as a biomass (mg/m³), in Lake Couchiching 1997.

Species	101	110	118	122	127	152	132	135	201	204	205	210	211	215	301	302	333	309	338	313	999
Date	Ac.Curv	Bo.Long	Ch.Sphae	Da.G.Meo	Da.Retro	Dia.Birg	Bos.Core	Ho.Gibber	Cal.Cop	Le.Minut	Sk.Oregon	Ep.Lacus	Ep.Lac.Cp	Cal.Naup	Cycl.Cop	Di.Tho	Eu.Serrul	Me.Edax	T.Extens	Cycl.Naup	Veliger
97-06-03	0	0 318	0 007	0	0	0	0	0	1 341	0 098	0	0	0	0 285	2 555	2 146	0	0	0	0.261	0
97-06-17	0	15.132	0.036	0 048	0	0	0	0	4 836	2 845	1 286	0 802	1 138	0 221	32 417	21 851	0	0	0 049	3 212	2 863
97-07-08	0	0.624	0 006	0 041	0	0 027	0	0	0 711	0	0	0	0	0 124	2 024	0	0 026	0 023	0 041	1 227	13 693
97-07-22	0.404	4 758	0 006	0.722	0	0	0	0	1 549	0 634	0.537	0 472	0 442	0 124	2 323	0 581	0	0	0 019	0 453	11 932
97-08-07	0	0 015	0	0 224	0 137	0 134	0	0	1 752	0 728	0 628	0	0	0 237	3 34	0 203	0	0 391	0 012	0 584	8 674
97-08-22	0	0 165	0	0 224	0 914	0 578	0 136	0 216	5 003	4 032	3 299	0.577	0 698	0 197	6 556	0 114	0	1 863	0 192	0 438	4 254
97-09-10	0	0.39	0	0 13	4 325	0 352	0	0 261	4 408	1 046	13 037	0 597	2 981	0 437	5.847	0 522	0	1 251	1 466	0 448	0 157
97-09-25	0	0.964	0	0 097	6 921	0 441	0	0 486	7 509	2 089	2 451	0	1.306	0 181	5.007	0.358	0	0 454	1 117	0 506	0 106
97-10-07	0	2 056	0	0 214	1 485	0	0	0 651	3 683	0 676	0 436	0	0 983	0 093	4 173	0 519	0	0 172	0 816	0 651	0 256
97-10-23	0	1 687	0	0 133	0 529	0.001	0	0 301	3 874	0 09	0.743	0	0	0 04	5 197	0 549	0	0	1.088	0 151	0

Table H-3: Seasonal zooplankton density trends (#/m3) from Lake Couchiching 1997.

Species	101	110	118	122	127	152	132	135	201	204	205	210	211	215	301	302	333	309	338	313	999
Date	Ac.Curv	Bo.Long	Ch.Sphae	Da.G.Meo	Da.Retro	Dia.Birg	Bos.Core	Ho.Gibber	Cal.Cop	Le.Minut	Sk.Oregon	Ep.Lacus	Ep.Lac.Cp	Cal.Naup	Cycl.Cop	Di.Tho	Eu.Serrul	Me.Edax	T.Extens	Cycl.Naup	Veliger
97-06-03	0 0	274 8	29 4	0 0	0 0	0 0	0 0	0 0	863 7	19 6	0 0	0 0	0 0	1531 1	2198 5	451 5	0 0	0 0	0 0	3808 2	0 0
97-06-17	0 0	20675 1	323 0	40 4	0 0	0 0	0.0	0 0	1615 2	726 9	201 9	40 4	646 1	2261 3	31658 7	6137 9	0 0	0 0	40 4	52656 8	4199 6
97-07-08	0 0	1803 0	78 4	19 6	0 0	39 2	0 0	0 0	901 5	0 0	0 0	0 0	0 0	1411 1	3174 9	0 0	9 8	9 8	39 2	21950 0	16305 7
97-07-22	41.1	4440 4	41 1	246.7	0 0	0 0	0 0	0 0	657 8	164 5	61 7	20 6	370 0	986 8	2549 1	123 3	0 0	0 0	20 6	5673 9	12170 1
97-08-07	0 0	33 5	0 0	83 8	67 0	83 8	0 0	0 0	1407 1	201 0	67 0	0 0	0 0	2211 1	4020 2	50 3	0 0	134 0	16 8	8509 3	9581 4
97-08-22	0 0	301 5	0 0	37 7	339 2	376 9	37 7	37.7	1733 7	1093 0	452 3	37 7	226 1	2110 6	4145 8	75 4	0 0	640 7	226 1	7010 1	4748 8
97-09-10	0 0	678 4	0 0	18 8	2713 6	301 5	0 0	150 8	1582 9	301 5	1582 9	75 4	1281 4	4221 2	4221 2	150 8	0 0	339 2	1620 6	8140 8	150 8
97-09-25	0.0	2261 3	0.0	75 4	3241 2	150 8	0 0	150 8	3165 9	603 0	263 8	0 0	452 3	1809 1	4447 3	113 1	0 0	150 8	1243 7	7010 1	75 4
97-10-07	0 0	3165 9	0 0	37.7	603 0	0 0	0 0	263 8	1733 7	169 6	56 5	0 0	527 6	678 4	4899 6	169 6	0 0	56 5	810 3	8216 2	301 5
97-10-23	0.0	3693 5	0 0	37 7	226 1	18 8	0 0	37 7	1582 9	18 8	75.4	0.0	0 0	150 8	5728 7	131 9	0 0	0 0	1055 3	2186 0	0 0

Table H-4: Seasonal zooplankton length (µm) trends in L. Couchiching. 1997.

Species	101	110	118	122	127	152	132	135	201	204	205	210	211	215	301	302	333	309	338	313	999
Date	Ac.Curv	Bo.Long	Ch.Sphae	Da.G.Meo	Da.Retro	Dia.Birg	Bos.Core	Ho.Gibber	Cal.Cop	Le.Minut	Sk.Oregon	Ep.Lacus	Ep.Lac.Cp	Cal.Naup	Cycl.Cop	Di.Tho	Eu.Serrul	Me.Edax	T.Extens	Cycl.Naup	Veliger
97-06-03	0 0	353 5	249 5	0 0	0 0	0 0	0 0	0 0	589 0	956 8	0 0	0 0	0 0	277 0	508 5	932 8	0 0	0 0	0 0	180 7	0 0
97-06-17	0 0	303 2	199 4	600 9	0 0	0 0	0 0	0 0	764 9	869 0	1039 0	1685 2	611 0	199 7	481 7	831.9	0 0	0 0	541 5	174 7	98 8
97-07-08	0 0	242 9	179 3	727 6	0 0	497 7	0 0	0 0	447 0	0 0	0.0	0 0	0 0	195 0	400 6	0 0	742 5	712 8	509 5	168 3	113 0
97-07-22	727.7	335 7	215 4	814 8	0 0	0.0	0 0	0 0	686 9	863 2	1204 2	1788 2	515 1	228 2	464 4	931.7	0 0	0 0	489 4	192 9	124 1
97-08-07	0 0	265 8	0 0	796 8	699 6	648 2	0 0	0 0	523 6	843 0	1235 6	0 0	0 0	215 6	442 6	881 0	0 0	772 2	442 1	181 5	118 7
97-08-22	0 0	285.9	0 0	1062 2	767 1	656.4	528 2	802 0	735 8	848 9	1120.5	1515 7	758 9	205 8	557 9	525 4	0 0	771 1	452 9	176.1	117.9
97-09-10	0 0	291 1	0 0	1118 6	636 0	597.7	0 0	538 5	730 8	827 1	1173 3	1010.7	633 6	215 3	513 7	812 6	0 0	834 0	478 3	166 2	131 2
97-09-25	0 0	258 0	0 0	619 9	708 2	816 7	0 0	599 6	688 4	825 2	1236 0	0 0	729 4	211 1	486 2	796 4	0 0	782 3	476 8	187 6	158 3
97-10-07	0 0	297 1	0 0	1046 0	725 9	0 0	0 0	593 5	660 6	876 2	1141 8	0 0	581 8	241 0	453 3	786 3	0 0	785 8	499 5	192 9	114 4
97-10-23	0 0	259 1	0 0	848 0	716.1	179 6	0 0	881 1	696 4	942.7	1263 2	0 0	0 0	328 5	453 2	887 7	0 0	0 0	498 7	178 8	0.0

Appendix I

Appendix I - Macroflora Data

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Table I-1. Dominance of macroflora at each of the 21 water and sediment quality stations.

July 1997

Station	#1	#2	#3	#4
1	*Chara*	*Vallisneria*		
2	*Chara*	*Vallisneria*	*Utricularia*	
3	*Chara*	*Najas*	*Utricularia*	
4	*Chara*	*Vallisneria*	*Utricularia*	
5				*Spirogyra*
6	*Chara*	*Vallisneria*	*Potamogeton amphipolius.*	
7	*Chara*	*Najas*		
8	*Chara*	*Najas*	*Vallisneria*	
9	*Chara*	*Vallisneria*	*Elodea*	
10	*Chara*			
11	*Chara*	*Vallisneria*	*Utricularia*	
12	*Chara*	*Utricularia*	*Najas*	
13	*Chara*	*Najas*	*Utricularia*	
14	*Chara*	*Utricularia*	*Vallisneria*	
15				*Spirogyra*
16	*Chara*	*Najas*	*Vallisneria*	
17	*Chara*	*Vallisneria*	*Najas*	*Utricularia*
18	*Chara*	*Vallisneria*		*Spirogyra*
19	*Elodea*	*Vallisneria*	*Myriophyllum*	
20	*Chara*	*Vallisneria*		
21	*Chara*	*Vallisneria*		

August 1997

Station	#1	#2	#3	#4
1	*Chara*	*Vallisneria*		
2	*Chara*	*Vallisneria*	*Utricularia*	
3	*Chara*			
4	*Chara*			
5				
6	*Chara*	*Najas*		
7	*Chara*	*Vallisneria*		
8	*Chara*			
9	*Chara*			
10	*Chara*	*Spirygyra*		
11	*Chara*			
12	*Chara*			
13	*Chara*			
14	*Chara*			
15				
16	*Chara*	*Vallisneria*		
17	*Spirogyra/Cladophora*			
18	*Chara*			
19	*Elodea*	*Chara*	*Potamogeton richardsonii*	
20	*Chara*	*Vallisneria*		
21	*Chara*			

Appendix J

Appendix J - Benthic Macroinvertebrate Data, QA/QC Measures, and Detailed Statistical Analyses

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Figure J-2. Dendrogram showing the similarities in benthic community composition among stations in Lake Couchiching. Dendrogram was based on a complete linkage

method using a Bray-Curtis distance measure.

Figure J-3. Scatterplots of Correspondence Analysis (CA) axis scores. Samples close together in (a) have similar benthic communities. In (b) taxa close together tended to be found at the same sites.

Figure J-4. Relationships between the first two ordination axes and depth, colour and secchi depth.

J.1 Introduction

This appendix provides details on sorting procedures, sorting efficiencey (QA/QC) and detailed statistical analysis. The results of statistical analysis are briefly described, and are elaborated upon in the main document. Field notes made during the collection of the benthic samples are given in Appendix K, while raw benthic macroinvertebrate data are provided in Appendix L.

J.2 Methods

Sample Processing and Identification

In the laboratory, all samples were stained with rose bengal dye to improve visibility of the preserved organisms and washed using a 200 μm mesh sieve to remove excess dye, preservative and debris. Samples were scanned under a binocular microscope at 6-12 x magnification to further improve visibility of benthic invertebrates. Benthos were removed from the debris and re-preserved in 70% ethanol until they were identified. Sorting efficiency was just over 94% (i.e., > 94% of the organisms in the samples were removed, Appendix J).

Many of the samples were split to reduce the time needed for sorting. In most cases, sorting required 3-4 hours to process at least ≥¼ of a sample, collecting at least 100 organisms (Griffiths, 1998). Splitting or sub-sampling was performed by volume during the washing process in the laboratory. Splitting by volume is relatively common (Marchant, 1989; Resh and McElravy, 1993; Reynoldson and Rosenberg, 1996), does not bias for specific taxa, has negligible effects on variance of total numbers within stations (Kilgour et al., 1995), and little effect on the ability to distinguish between different types of benthic communities (Reynoldson and Rosenbgerg, 1996).

Benthic invertebrates were identified following the standards described by the Ontario Ministry of Natural Resources (OMNR, 1985). Chironomids from each sample were sorted into like groups. A minimum of 10% of the organisms from each group were slide mounted in a clearing agent for identification. Up to 50 oligochaete worms from each sample were also slide mounted in a clearing agent for identification. The taxonomic keys used for the identification of benthos from Lake Couchiching are given in Appendix J. Identifications of oligochaete worms were confirmed by Dr. David Barton, University of Waterloo. All identified specimens as well as a reference collection were stored in 70% alcohol in glass vials with neoprene stoppers. Slide-mounted specimens are in labelled slide boxes. This material is available for review from the Ontario Ministry of the Environment, Southwest Region, London (B. Hawkins).

To ensure a high degree of efficiency in removing invertebrates from benthic samples collected from Lake Couchiching, Water Systems Analysts implemented a Quality Assurance/Quality Control (QA/QC) work program. Only one technician (Ms. Nell Farmer, M.Sc.) sorted benthos from the samples. Mr. Bill Morton performed the QA/QC checking. During initial sorting, samples were split into four parts (quarters). Benthic invertebrates were removed from each quarter until approximately three hours had elapsed. During sorting, large organisms were removed first, and the sample was scanned under a stereo microscope at 6-12 x magnification. The numbers of organisms sorted from the debris was recorded. During re-

sorting (QA/QC checking), sub-samples that had been processed were re-processed as if it was the first time. The numbers of organisms found in the re-sorted samples was recorded.

Data Analysis

Analysis and interpretation of the benthic community in Lake Couchiching had two general objectives:

1. to establish trophic condition of the lake; and,
2. to determine the degree to which local point sources, and natural features and anthropogenic features influence benthic community composition.

To establish the trophic condition of the lake, we followed Saether's (1979) interpretations of sublittoral and profundal chironomid communities. We also compared observed total abundances in Lake Couchiching with abundances from lakes with known trophic status.

To achieve the second objective, we analyzed the benthic data using a two-step approach. The first step involved the calculation of summary metrics and examining the spatial variations of those metrics. The metrics included:

1 total abundance,
2 total number of taxa,
3 Shannon's H' (Shannon and Weaver, 1949)

$$H' = \sum p_i \log_2 p_i \qquad [1]$$

where, p_i refers to the proportion of the total numbers accounted for by the ith taxon; and,

4 Evenness, J' (Price, 1973)

$$J' = \frac{H'}{H'_{max}} \qquad [2]$$

where, H' is Shannon's H', and H'_{max} is the maximum possible H'.

The second step involved detailed multivariate analyses to more fully explore variations in composition and to explore the relationships between benthic community composition and physico-chemical properties at each of the stations.

Multivariate methods used to examine spatial variations in benthic community composition, included clustering and ordination techniques. Cluster analyses included the complete-linkage method, the flexible-clustering method (with beta set equal to -1), the single-linkage method, the unweighted pair-group method using an arithmetic average (UPGMA), the unweighted pair-group method using a centroid average (UPGMC), the weighted pair-group method using an arithmetic average (WPGMA), and the weighted pair-group method using a centroid average (WPGMC). Cluster analyses were performed on both a Bray-Curtis distance measure and a Jaccard's Coefficient of Community (Rohlf, 1993). For each cluster result, we examined

the correlation between the cophenetic matrix based on the cluster dendrogram and the original distance matrix (i.e., Bray-Curtis distance measure or the Jaccard Coefficient). Such cophenetic correlations can be used as a measure of the goodness of fit of a cluster analysis (Rohlf, 1993). In this analysis, the complete linkage method provided strong correlations with both the $\log_{10}$ transformed (Bray-Curtis) and presence/absence data (Jaccard Coefficient; Table 3). As such, these dendrograms were examined for spatial pattern.

In addition to the cluster analyses, we also used ordination (Correspondence Analysis, CA) to portray similarities among stations. Of the available methods, CA was selected because it gives an ordination of both taxa and stations so that it is readily possible to identify those taxa that are important to the patterns among stations. Although not presented here, other ordinations (Principal Components, Non-Metric Multidimensional Scaling) demonstrated similar relationships among stations. To portray spatial variations in community composition, we plotted the first two ordination axes from CA in a two-dimensional scatterplot.

Associations between benthic community composition and measured environmental conditions were determined in three stages. Mantel's (1967) test was used for the first stage to evaluate the concordance (correlation) between distance matrices based on faunal composition and physico-chemical properties at each station. Euclidean and Bray-Curtis distance matrices were calculated using average taxa abundances at each of the 21 stations, and using both raw and $\log_{10}$ abundances. Euclidean distances were calculated based on suites of environmental variables that included: (1) depth, (2) water column metal concentrations, (3) water column nutrient and major ion concentrations, (4) water column physical and biological characteristics, (5) concentrations of organic contaminants in the water column, (6) sediment physical features (particle size), (7) concentrations of solvent extractables in sediments, (8) concentrations of metals in sediments, (9) concentrations of nutrients and major ions in sediments, and (10) sediment organic content.

With Mantel's (1967) test, concordance between two matrices is measured as a summation of the cross-products between the off-diagonal elements of the two matrices. The degree of association of the two matrices is then judged against a null distribution determined via permutation. Because the Mantel statistic operates like a coefficient of determination (i.e., r^2, K.M. Somers, pers. comm.), Mantel *r* values indicate approximately, the amount of variation in one matrix explained by another.

In the second stage of the multivariate analysis, we used simple correlation analysis with scatterplots to determine the strength and nature of the relationships between the measured environmental variables and ordination axes that characterized variations in benthic community composition in Lake Couchiching. In this analysis, we used a subset of environmental variables against which to explore associations. Based on the Mantel correlations, it was apparent that depth, physical and biological characteristics of the water column and sediment metal concentrations explained significant amounts of spatial variation in benthic community composition (Table J-1). Rather than correlate all of the water physico-biological and sediment metal variables with benthic ordination axes, we selected those variables most strongly

associated with spatial patterns in environmental conditions. This selection process was based on a principal components analysis (PCA) of the physical and biological water data, and sediment metal data PCA (Table J-2). There was a single dominant gradient in the sediment metal concentrations primarily explained by high to low concentrations of iron. In the physical and biological water column data, secchi depth and colour were correlated with the two dominant gradients (PCA axes). Water depth, sediment-iron levels, secchi depth and colour were used as explanatory environmental variables in the correlation analyses.

J.3 Results

A total of 10 of the 63 (16%) benthic samples from Lake Couchiching were resorted. Subsampling errors ranged from 0 to 9.9% and averaged 5.9%. Therefore, over 94% of benthic organisms were recovered during sorting (Table J-3).

Spatial variation in benthic community composition in Lake Couchiching was significant. Figures J-1 and J-2 show this spatial variation in cluster dendrograms, while Figure J-3 shows the associations among stations based on an ordination (correspondence analysis). In general, the three figures were consistent in demonstrating the separation of Stations 5, 6, 15, 17, 18 and 19 from all other stations. Stations 5, 15 and 17 were the deep-water stations in the middle of the lake. Depth was correlated with the dominant gradient in benthic community composition (Table J-4, Figure J-4). The deep-water Stations (5, 15 and 17) had benthic communities with higher proportions of the phantom midge *Chaoborus punctipennis*. Two of these stations (5 and 15) also tended to have higher proportions of sphaeriid clams (*Pisidium*), the snail *Helisoma anceps* and the chironomid *Paracladopelma* (Figure J-3, Table J-5). Station 19, a shallow station (1.7 m) near the inflow from Lake Simcoe had a unique fauna that consisted of relatively high proportions of isopods *(Lirceus lineata, Caecidotea racovitzae*), snails (*Viviparous georgianus*) and worms (*Limnodrilus clarapedianus*) (Figure J3, Table J-5). Although the major gradient in benthic community composition was associated with depth, the secondary gradient in benthic community composition (CA Axis 2) was associated with colour (Table J-4, Figure J-4).

The dominant chironomid taxa in both shallow and deep water are given in Table J-6. A variety of sensitive Orthocladiinae were present in the lake including *Epoicocladius* and *Thienemanniella*. More tolerant chironomids included representatives of the Chironomini (*Chironomus, Dicrotendipes, Paratendipes*), Tanytarsini (*Cladotanytarsus, Tanytarsus*) and Tanypodinae (*Procladius*).

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Table J-1. Mantel correlations between Euclidean and Bray-Curtis distance of raw and log transformed benthic community data and Euclidean distance matrices of suites of environmental descriptors. Sample size is n=21. Probability of no significant positive association is given in parenthesis and is based on randomization. Significant positive correlations are in bold font.

	Distance Matrix	Date	Euclidean Distance		Bray-Curtis Distance Matrix	
			Raw Data	Logged	Raw Data	Logged
-1	Sediment metals	June 2-3	0.034 (0.284)	**0.367**	0.252 (0.108)	**0.323** **(0.041)**
-2	Sediment particle size	June 2-3	0.185 (0.158)	0.136 (0.175)	0.126 (0.226)	0.078 (0.316)
-3	Sediment major ions	June 2-3	0.079 (0.186)	0.139 (0.090)	-0.186 (0.980)	-0.179 (0.962)
-4	Sediment loss on ignition	June 2-3	0.031 (0.305)	-0.031 0.446)	0.017 (0.403)	-0.033 (0.461)
-5	Sediment TPH and oil & grease	June 2-3	-0.033 (0.505)	0.012 (0.438)	-0.011 (0.503)	-0.007 (0.526)
-6	Depth	June 2-3	0.135 (0.161)	**0.415** **(0.01)**	**0.461** **(0.01)**	**0.614** **(0.00)**
		July 7-8	0.132 (0.17)	**0.409** **(0.01)**	**0.458** **(0.02)**	**0.612**
-7	Water metals	June 2-3	-0.006 (0.543)	0.216 (0.053)	0.045 (0.359)	0.050 (0.356)
		July 7-8	-0.134 (0.849)	-0.174 (0.827)	-0.194 (0.934)	-0.187 (0.898)
-8	Water major ions	June 2-3	-0.107 (0.210)	-0.200 (0.043)	0.079 (0.745)	0.135 (0.868)
		July 7-8	-0.034 (0.566)	0.100 (0.754)	-0.113 (0.719)	-0.036 (0.516)
-9	Water physical features	June 2-3	0.168 (0.167)	**0.562** **(0.001)**	**0.574** **(0.002)**	**0.677** **(0.001)**
		July 7-8	0.195 (0.119)	**0.465** **(0.001)**	**0.672** **(0.002)**	**0.627** **(0.001)**
-10	Water Atrazine	June 2-3	-0.002 (0.553)	-0.018 (0.611)	-0.046 (0.759)	-0.023 (0.588)

Table J-2. Principal components analysis of physico-biological data and sediment metal concentrations.

Sediment Metals				Physico-Biological (June 3)						
					June 2-3			35983		
Variable	1	2	3	Variables	1	2	3	1	2	3
Aluminum	0.58	0.81	0.12	Secchi Depth	**0.93**	0.09	0.15	**0.95**	0.26	0.13
Barium	0	0	-0.25	Colour	-0.1	-0.68	0.73	-0.26	**0.96**	0.05
Chromium	0	0	0	Tubidity	0	0	-0.1	0.08	0	0.04
Cobalt	0	0	0	Chl *a*	0.17	-0.73	-0.66	0.12	0.08	-0.99
Copper	0	0	0							
Iron	**0.82**	0.56	-0.12							
Lead	0	0	-0.1							
Manganese	0	0.1	-0.1							
Mercury	0	0	0							
Nickel	0	0	0							
Selenium	0	0	0							
Strontium	0	0.1	-0.54							
Titanium	0	-0.1	0.77							
Vanadium	0	0	0.01							
Zinc	0	0	-0.1							
Variance	97.7	2.2	0.06		72.3	15.2	9.9	64.2	30.9	3.11

Table J-3. Benthic QA/QC results

Station	1	3	4	5	7	7	7	12	18	20		
Replicate	2	3	1	3	1	2	3	2	2	3		
Date	97.05.28	97.05.28	97.05.28	97.05.28	97.05.29	97.05.29	97.05.29	97.05.30	97.05.29	97.05.29		
TAXA												
ANNELIDA:									5			
OLIGOCHAETA:			8									
AMPHIPODA:		5	4		8	3	10	1				
ISOPODA:									1			
DIPTERA:												
Chaoboridae:				2								
Chironomidae:		7	4	1	5	7	11	3	6			
EPHEMEROPTERA:	2			1	2	2	1		1			
TRICHOPTERA:			1									
MOLLUSCA:												
Dreissena		2	1		5							
Sphaeriidae:				2								
PLATYHELMINTHES			1				2					
No. in resort(A)	2	14	19	3	20	12	23	4	13	0		
No. in original sample(B)	48	306	276	97	181	121	223	196	141	268		
Total specimens(A+B)	50	320	295	103	201	133	246	200	154	268		
% error((A/A+B)X 100)	4	4.4	6.4	4.2	9.9	9	9.3	2	8.4	0	average	5.76
Resorted 10/63 samples = 16%												
Original Sort Technician: Nell Farmer			QC Technician: W. B. Morton									
1997.12.16												

Table J-4. Correlations among community descriptors and selected environmental variables.

	CA Axis 1	CA Axis 2	CA Axis 3	Secchi	Colour	Iron	Depth
CA Axis 1	1.00						
CA Axis 2	-0.03	1.00					
CA Axis 3	-0.04	0.05	1.00				
Secchi	-0.85	0.09	0.34	1.00			
Colour	-0.01	-0.65	-0.30	-0.12	1.00		
Iron	-0.41	-0.10	-0.01	0.32	0.30	1.00	
Depth	-0.94	0.02	0.29	0.96	-0.05	0.39	1

	CA Axis 1	CA Axis 2	CA Axis 3	Secchi	Colour	Iron	Depth
CA Axis 1	1.00						
CA Axis 2	-0.10	1.00					
CA Axis 3	0.09	-0.05	1.00				
Secchi	0.53	-0.70	0.50	1.00			
Colour	-0.51	-0.35	-0.24	-0.12	1.00		
Iron	0.14	-0.41	0.09	0.32	0.30	1.00	
Depth	0.51	-0.80	0.44	0.96	-0.05	0.39	1.00

Table J-5. Average % abundances of major taxonomic benthic groups at each of the 21 benthic sampling stations in Lake Couchiching on May 29, 1997.

Major Group	Station																				
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
Hirudinea	<1	<1	<1	<1		<1	<1	<1	<1		<1					<1			1	<1	
Oligochaeta	1	2	<1	3	1	6	<1	<1	<1	1	1		<1	5	6			7	2	1	2
Acari	1		<1	1	<1	<1	1	1	1	<1	1		<1	<1		1	2	<1	<1	1	<1
Chydoridae				2																	
Amphipoda	37	15	38	20		1	26	37	24	20	22	25	23	8	<1	23	2	2	30	36	11
Decapoda			<1					<1				<1									<1
Isopoda	3	1						<1										2	5	<1	
Elmidae (beetles)					<1																
Ceratopogonidae		<1		1	1		<1	<1	1	1	1	1	1	1		1	1			<1	1
Chaoboridae			<1		2				<1						8		2				
Chironomidae	30	19	17	29	16	21	28	27	24	12	31	38	18	23	10	46	35	74	3	23	26
Empididae							<1	<1											<1		
Ephemeroptera	15	1	2	1	2	17	14	7	6	1	16	4	8	1	5	9	21	6		2	12
Megaloptera														<1			1				<1
Odonata	1		<1				<1	<1	<1		<1			<1		1			<1		
Trichoptera	2	1	1	3		1	1	1	<1	2	1	1	1	1		1		<1	<1	1	1
Dreissenidae	9	47	35	24	64	47	22	20	35	62	22	27	45	59	40	14	31	1	45	31	42
Sphaeriidae	<1				4	2		<1	<1	1		<1	<1		6	<1	1	1			<1
Unionidae													<1		<1						
Gastropoda	1	13	4	16	12	4	5	5	7	1	4	4	3	2	24	4	1	5	14	3	4
Nematoda	1	1		<1									<1		2		3	<1		<1	
Platyhelminthes	<1		<1			<1	<1	<1		<1		<1	1	1	<1		1		<1	1	
Total Number of Taxa	23	20	20	29	18	14	21	28	25	23	24	21	23	24	19	22	14	19	19	25	24
Total Number of Specimens	36974	42840	50839	52439	48825	7229	31049	59668	46247	62216	38574	40826	36737	98005	15376	46751	5422	22753	34959	36678	25775
H'	3.01	2.70	2.46	3.68	1.98	2.60	3.19	3.11	2.92	1.98	3.31	3.21	2.79	2.38	2.78	3.41	2.67	2.65	2.63	2.91	3.12
Evenness	0.67	0.63	0.58	0.76	0.49	0.68	0.73	0.65	0.64	0.45	0.73	0.74	0.62	0.52	0.66	0.77	0.72	0.62	0.62	0.63	0.68

Table J-6 . Percentage composition of profundal and sublittoral chironomid communities.

Chironomid taxon	profundal	sublittoral
Chironomus	12	5
Cladotanytarsus	9	3
Cryptochironomus	1	1
Dicrotendipes	4	26
Microtendipes		<1
Parachironomus		<1
Paracladopelma	1	<1
Paratanytarsus		2
Paratendipes	7	20
Phaenopsectra flavipes		<1
Polypedilum	2	3
Pseudochironomus		2
Stempellina	1	1
Tanytarsus	35	9
Tribelos jucundum	2	6
Zavreleilla		<1
ORTHOCLADIINAE:		
Cricotopus		2
Epoicocladius	<1	<1
Psectrocladius	2	3
Thienemanniella		<1
TANYPODINAE:		
Ablabesmyia	4	8
Clinotanypus pinguis		1
Procladius	21	7

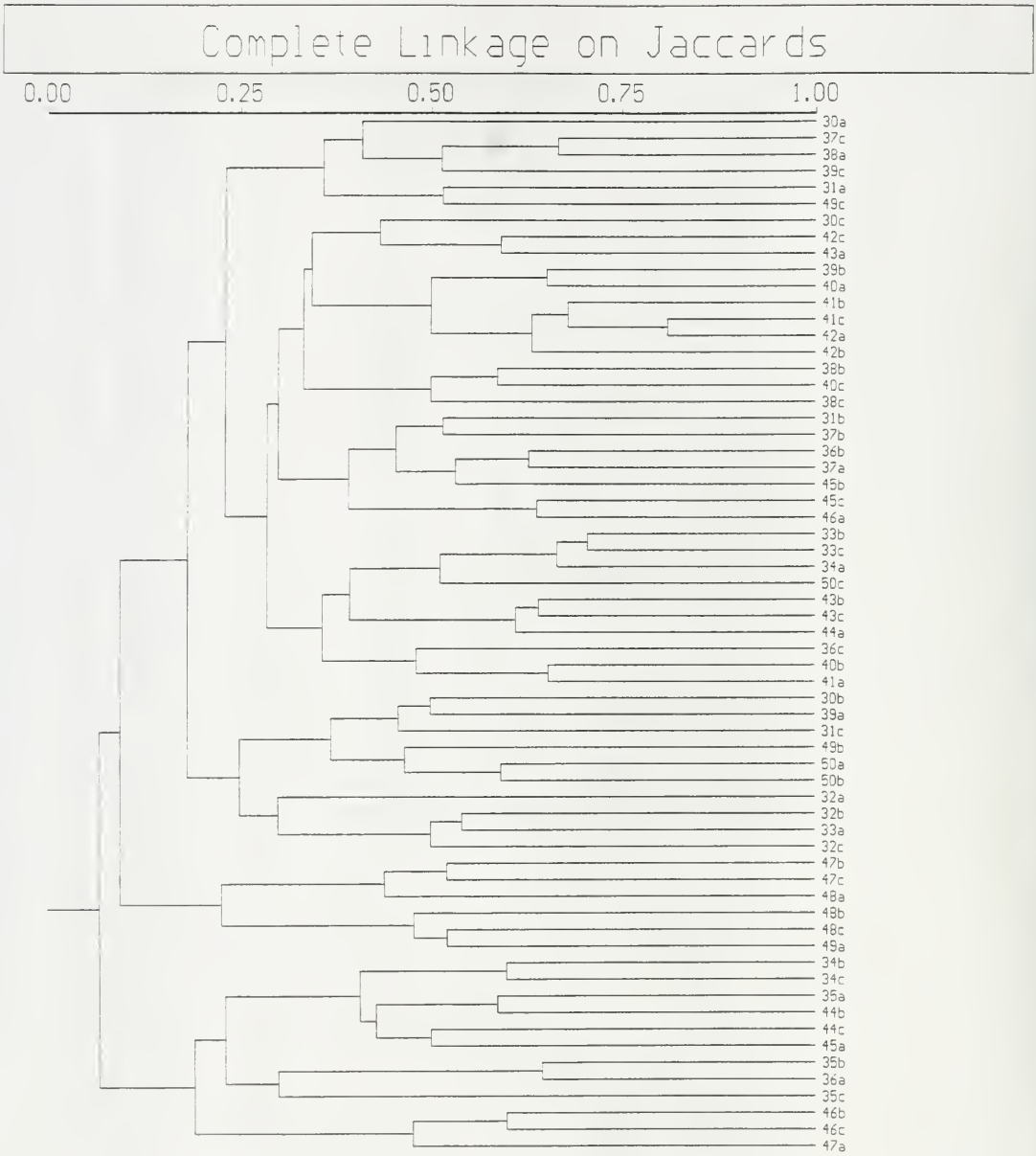

Figure J-1. Dendrogram showing the similarities in benthic community composition among stations in Lake Couchiching. Dendrogram was based on a complete linkage method using a Jaccards coefficient of community.

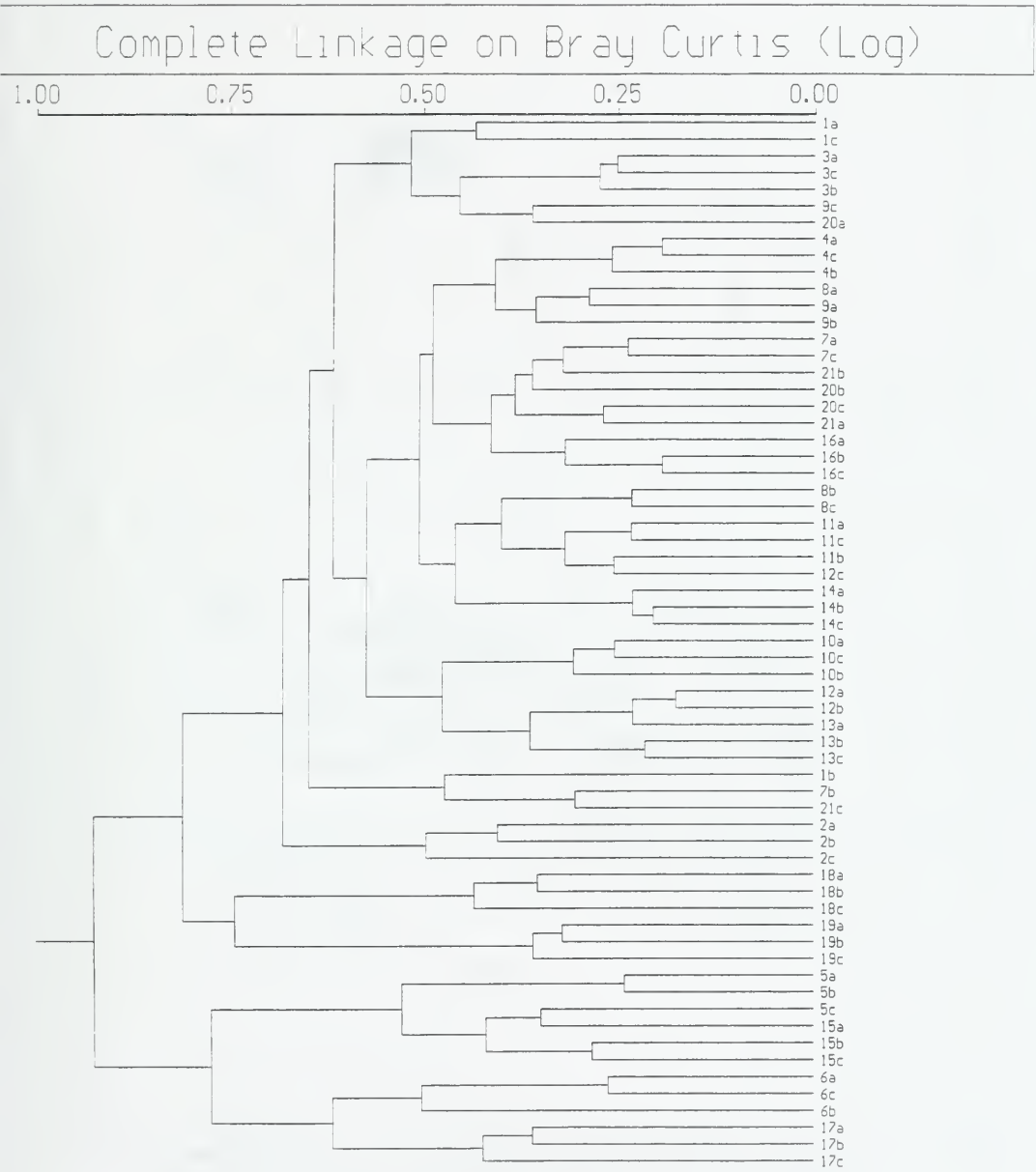

Figure J-2. Dendrogram showing the similarities in benthic community composition among stations in Lake Couchiching. Dendrogram was based on a complete linkage method using a Bray-Curtis distance measure.

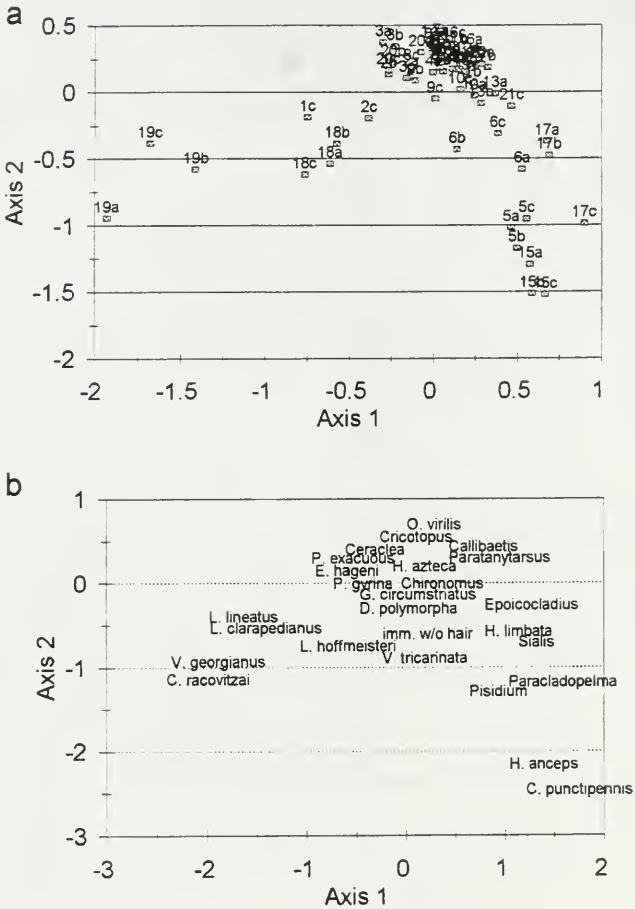

Figure J-3. Scatterplots of Correspondence Analysis (CA) axis scores. Samples close together in (a) have similar benthic communities. In (b) taxa close together tended to be found at the same sites.

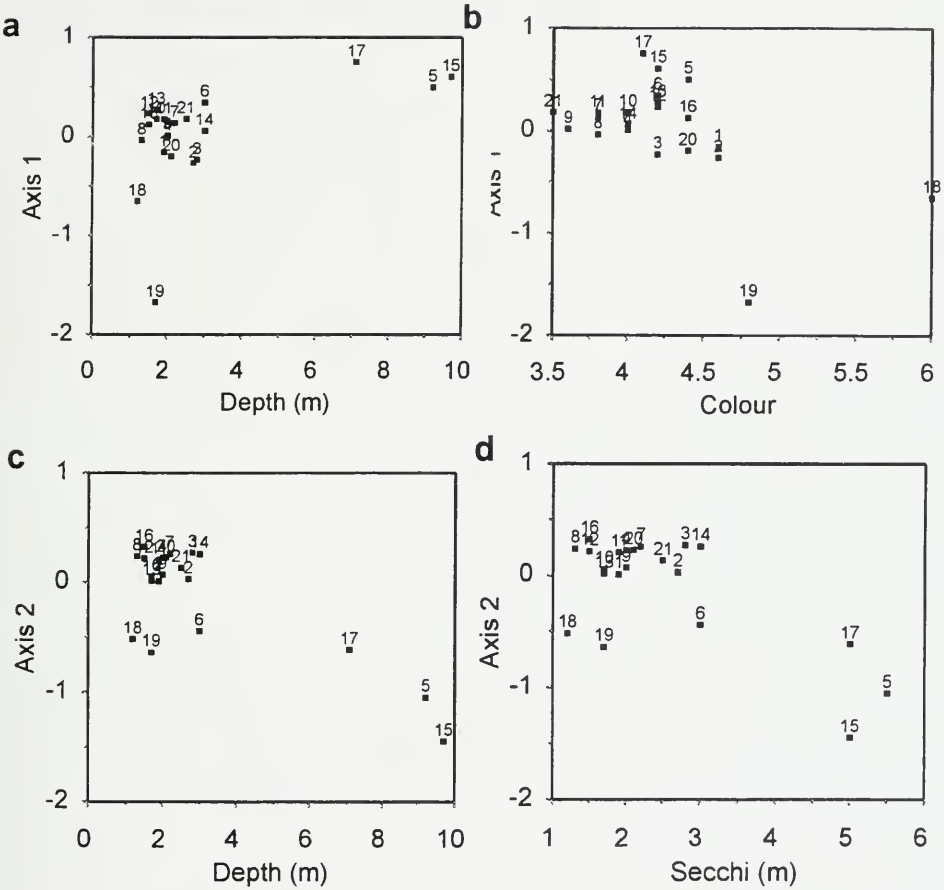

Figure J-4. Relationships between the first two ordination axes and depth, colour and secchi depth.

Appendix K

Appendix K - Benthic Collection Field Notes

Lake Couchiching

May 28/[illegible]
Stn. # 1

1) Location: Couchiching - SE of Marina Breakwall (70m)
Depth: 20m Sampler Fullness: 5/5 Sample Bottles: 1-Snow
Sediment Type: Silty ooze Odour: Sulphur
Sediment Characteristics:
Macrophytes: none (sparce) common abundant Chara
Algae: (none) sparce common abundant
Invertebrates: Midge, Zebra Mussels, Isopods, Hexagenia, Amphipods, Dead[illegible]
Notes:
- calcium build up on Chara

2) Location: Couchiching - SE of Marina Breakwall (70m)
Depth: 20m Sampler Fullness: 5/5 Sample Bottles: 1-Snow
Sediment Type: Silty ooze Odour: Sulphur
Sediment Characteristics: Hard clay, some organics
Macrophytes: none (sparce) common abundant Chara, Tuber
Algae: (none) sparce common abundant
Invertebrates: Midge, Mayfly, Zebra Mussels, Dead Snails, Clam
Notes:

3) Location: [illegible] - SE of Marina Breakwall (70m)
Depth: 20m Sampler Fullness: 5/5 Sample Bottles: 1-Snow
Sediment Type: Silty ooze, Odour: Sulphur
Sediment Characteristics: Some hard clay
Macrophytes: none sparce (common) abundant [illegible] Tuber
Algae: (none) sparce common abundant
Invertebrates: [illegible] Mussels, Crayfish, Amphipod, Damsel Fly, Worm
Notes: Dead Snails, Midge, Clam

Addition Information: 50% [illegible] of Chara & Elodia

4) [illegible] Common Chara, Zebra Mussels, Midge 5/5, 20m depth, Sulphur [illegible]

Collector: Hawk Notes By: Melissa

LAKE COUCHICHING

MAY 28 /97
STN # 2

1) Location: COUCHICHING - PERPENDICULAR TO COUCHICHING BEACH PARK (150 m
Depth: 28 m Sampler Fullness: 5/5 Sample Bottles: 1-SNOW
Sediment Type: Silty-ooze Odour: Sulphur
Sediment Characteristics:
Macrophytes: none (sparce) common abundant CHARA
Algae: (none) sparce common abundant
Invertebrates: snails, zebra mussels, MIDGES, DEAD SNAILS
Notes:

2) Location: Couchiching - off Couchiching BEACH PARK (150m)
Depth: 28 m Sampler Fullness: 5/5 Sample Bottles: 1-SNOW
Sediment Type: silty-ooze Odour: Sulphur
Sediment Characteristics:
Macrophytes: none sparce (common) abundant CHARA, TUBERS
Algae: (none) sparce common abundant
Invertebrates: ZEBRA MUSSELS SNAILS, AMPHIPODS, leech, MIDGES, DEAD SNAILS
Notes:

3) Location: Couchiching - off Couchiching BEACH PARK (150 m)
Depth: 28 m Sampler Fullness: 5/5 Sample Bottles: 1-SNOW
Sediment Type: silty-ooze Odour: Sulphur
Sediment Characteristics:
Macrophytes: none (sparce) common abundant [illegible]
Algae: (none) sparce common abundant
Invertebrates: WORM, HEXAGENIA, ZEBRA MUSSELS, SNAILS, MIDGE, AMPHIPODS
Notes: DEAD SNAILS

Addition Information: 30-40% COVER CHARA P. HEXAGENIA

4) 5/5, sulphur smell, silty-ooze, SIMULAR TO #1

Collector: HAWKS Notes By: Melissa

LAKE Couchiching

MAY 28/97
STN # 3

1) Location: LAKE. Couchiching - 300m offshore : 300m North of Water
Depth: 2.7m Sampler Fullness: 4/5 Sample Bottles: 1 - SNOW
Sediment Type: Silty ooze Odour: sulfur
Sediment Characteristics:
Macrophytes: none sparce common (abundant) CHARA
Algae: (none) sparce common abundant
Invertebrates: ZEBRA MUSSEL MIDGE, AMPHIPOD, DEAD SNAILS
Notes: heavy calcium deposits ON CHARA

2) Location: Couchiching - SAME AS ABOVE
Depth: 2.7m Sampler Fullness: 4/5 Sample Bottles: 1 - SNOW
Sediment Type: Silty ooze Odour: Sulphur
Sediment Characteristics:
Macrophytes: none sparce common (abundant) CHARA
Algae: (none) sparce common abundant
Invertebrates: Amphipods, zebra mussels MIDGE DEAD SNAILS
Notes: Heavy calcium deposits ON CHARA

3) Location: Couchiching - SAME AS ABOVE
Depth: 2.7m Sampler Fullness: 4/5 Sample Bottles: 1 - SNOW
Sediment Type: Silty ooze Odour: Sulphur
Sediment Characteristics:
Macrophytes: none sparce common (abundant) [illegible]
Algae: (none) sparce common abundant
Invertebrates: MIDGE ZEBRA CRAYFISH (THAT BITES!), AMPHIPOD, CLAM, DEAD S
Notes: Heavy [illegible] CHARA

Addition Information: COVER = 100% CHARA

4) 4/5 SIMILAR TO ALL ABOVE

Collector: HAWK Notes By: Melissa

LAKE
Couchiching

MAY 2017
STN #4

1) Location: Couchiching - off Orillia (135m off SW pt - 595m off Wilson P
Depth: 22 m Sampler Fullness: 5/5 Sample Bottles: 1 - [illegible]
Sediment Type: [illegible] Odour: [illegible]
Sediment Characteristics:
Macrophytes: none sparce common abundant CHARA, TUBERS
Algae: none sparce common abundant
Invertebrates: [illegible] CADDIS FLY, DEAD SNAILS, SNAIL
Notes: CALCIFIED CHARA → MIDGE, DAMSELFLY, MAYFLY

2) Location: Couchiching - Ditto
Depth: 22 m Sampler Fullness: 5/5 Sample Bottles: 1 - SNSW
Sediment Type: [illegible] Odour: Sulphur
Sediment Characteristics:
Macrophytes: none sparce common abundant CHARA TUBERS (lots)
Algae: none sparce common abundant
Invertebrates: HEXAGENIA DEAD SNAILS midge amphipods, SNAILS, [illegible]
Notes:

3) Location: Couchiching - Ditto
Depth: 22 m Sampler Fullness: 5/5 Sample Bottles: 1 - SNSW
Sediment Type: [illegible] Odour: Sulphur
Sediment Characteristics:
Macrophytes: none sparce common abundant [illegible] TUBERS
Algae: none sparce common abundant
Invertebrates: Amphipods SNAILS CADDIS, MIDGE, HEXAGENIA, ZEBRA
Notes: [illegible]

Addition Information: [illegible]

4) 5/5 [illegible] SILT [illegible]

Collector: Hawk Notes By: Melissa

LAKE
Conchiching

MAY 26/94
STN #5

1) Location: Conchiching - South of CHIEFS ISLAND (1KM)
Depth: 9.0m Sampler Fullness: 5/5 Sample Bottles: 1- [illegible]
Sediment Type: Silty OOZE Odour: SLIGHT Sulfur
Sediment Characteristics:
Macrophytes: none sparce common abundant
Algae: none sparce common abundant AT SURFACE - SHORT FILAMENTS
Invertebrates: MIDGE HEXAGENIA, PHANTOM MIDGE, ZEBRA MUSSELS,
Notes:

2) Location: Conchiching - SAME AS ABOVE
Depth: 9.0m Sampler Fullness: 5/5 Sample Bottles: 1- SNOW
Sediment Type: Silty OOZE Odour: NONE
Sediment Characteristics:
Macrophytes: none sparce common abundant
Algae: none sparce common abundant
Invertebrates: MIDGE - HEXAGENIA, CLAM, ZEBRA MUSSELS
Notes:

3) Location: Conchiching - SAME AS ABOVE
Depth: 9.0m Sampler Fullness: 5/5 Sample Bottles: 1- SNOW
Sediment Type: Silty OOZE Odour: NONE
Sediment Characteristics:
Macrophytes: none sparce common abundant
Algae: none sparce common abundant
Invertebrates: CLAM HEXAGENIA, MIDGE, ZEBRA MUSSELS, PHANTOM MIDGE
Notes:

Addition Information: Secchi = 6.0m

4) 5/5, silty OOZE, NO SMELL, MIDGE

Collector: HAWK Notes By: Melissa

LAKE
Couchiching

MAY 2016
STN # 6

1) Location: Couchiching - Between Red Bow SC6 & Wilson Pt. 1/2 w
Depth: 3.2 m Sampler Fullness: 5/5 Sample Bottles: 1- SNOW
Sediment Type: Silty ooze Odour: NONE
Sediment Characteristics: - GREY
Macrophytes: none sparce common abundant TUBERS
Algae: none sparce common abundant
Invertebrates: WORMS zebra mussels HEXEGENIA, DEAD SNAILS (lots)
Notes: ↳ MIDGE

2) Location: Couchiching - SAME AS ABOVE
Depth: 3.2 m Sampler Fullness: Sample Bottles: 1- SNOW
Sediment Type: silty ooze - Odour: light Sulphur
Sediment Characteristics: - GREY
Macrophytes: none sparce common abundant CHARA TUBERS
Algae: none sparce common abundant
Invertebrates: ZEBRA Mussels, MIDGE, lots of SHELLS, HEXEGENIA
Notes:

3) Location: Couchiching - SAME AS ABOVE
Depth: 3.2 m Sampler Fullness: 5/5 Sample Bottles: 1- SNOW
Sediment Type: Silty ooze Odour: NONE
Sediment Characteristics: - GREY
Macrophytes: none sparce common abundant TUBERS
Algae: none sparce common abundant
Invertebrates: MIDGE, HEXEGENIA, lots of SHELLS, ZEBRA Mussels.
Notes:

Addition Information:

4) → 5/5 silty ooze - grey slight sulphur odour TAN SURFACE LAYER

Collector: HAWK Notes By: Melissa

LAKE
Couchiching

MAY 29/
STN # 7

1) Location: Couchiching - 300m EAST of shore

Depth: [illegible] Sampler Fullness: 5/5 Sample Bottles: [illegible]

Sediment Type: S[illegible] Odour: [illegible]

Sediment Characteristics: [illegible]

Macrophytes: none sparce common abundant [illegible]

Algae: none sparce common abundant GLOBULAR colonial [illegible]

Invertebrates: zebra [illegible], CADDISFLY, MIDGE, SNAIL

Notes: [illegible] CHARA

2) Location: Couchiching - [illegible] AGE

Depth: 21 m Sampler Fullness: 5/5 Sample Bottles: 1-SNOW

Sediment Type: [illegible] Odour: [illegible]

Sediment Characteristics: [illegible]

Macrophytes: none sparce common abundant [illegible] TURGID

Algae: none sparce common abundant

Invertebrates: DRAGON FLY, MAYFLY, MIDGE, HEXAGENIA, ZEBRA MUSSEL

Notes: [illegible] CHARA

3) Location: [illegible]

Depth: [illegible] m Sampler Fullness: [illegible] Sample Bottles: [illegible]

Sediment Type: S[illegible] Odour: [illegible]

Sediment Characteristics: GREY - colour

Macrophytes: none sparce common abundant [illegible]

Algae: none sparce common abundant GLOBULAR colonial ALGAE

Invertebrates: ZEBRA MUSSELS, CRAYFISH, MIDGE

Notes: [illegible] CHARA

Addition Information: Cover = 95% CHARA

4) [illegible]

Collector: HAWKS Notes By: McIssac

LAKE
Couchiching

May 27/97
STN #8

1) Location: Couchiching - 240 m off of AMIGO BEACH
Depth: 1.4m Sampler Fullness: 5/5 Sample Bottles: 1 SNOW
Sediment Type: silty-ooze Odour: NONE
Sediment Characteristics: grey colour
Macrophytes: none sparce (common) abundant CHARA
Algae: (none) sparce common abundant
Invertebrates: CRAYFISH SNAILS, HEXEGENIA, zebra mussels, leech MIDGE
Notes: Calcified CHARA BUT MORE NEW CLAMP

2) Location: Couchiching - SAME AS ABOVE
Depth: 1.4m Sampler Fullness: 5/5 Sample Bottles: 1-SNOW
Sediment Type: silty-ooze Odour: NONE
Sediment Characteristics: grey colour
Macrophytes: none sparce (common) abundant CHARA
Algae: (none) sparce common abundant
Invertebrates: HEXEGENIA, MIDGE, ISOPODS, AMPHIPODS, ZEBRA MUSSELS
Notes: CALCIFIED CHARA

3) Location: Couchiching - SAME AS ABOVE
Depth: 1.4m Sampler Fullness: 5/5 Sample Bottles: 1-SNOW
Sediment Type: silty-ooze Odour: NONE
Sediment Characteristics: GREY IN colour
Macrophytes: none sparce (common) abundant CHARA
Algae: (none) sparce common abundant
Invertebrates: CRAYFISH fistly, CLAM, LEECH, SNAILS, ZEBRA MUSSELS MIDGE
Notes: Calcified CHARA Amphipod

Addition Information: COVER 90% CHARA There was a sulphur smell in chemistry sample
4) → 4/5 silty ooze, no odour SAME AS ABOVE

Collector: HAWK Notes By: Melissa

LAKE
Couchiching

STN#

1) Location: Couchiching - EAST of CUMMERLAND BEACH Pt

Depth: 2.1m Sampler Fullness: 5/5 Sample Bottles: 1-SNOW

Sediment Type: Silty ooze Odour: NONE

Sediment Characteristics: GREY COLOUR

Macrophytes: none sparce common abundant CHARA

Algae: none sparce common abundant

Invertebrates: ZEBRA MUSSELS, MAYFLY, HEXEGENIA, MIDGE, AMPHIPOD, WORM

Notes: calcified CHARA

2) Location: Couchiching - SAME AS ABOVE

Depth: 2.1 Sampler Fullness: 5/5 Sample Bottles: 1-SNOW

Sediment Type: Silty OOZE Odour: NONE

Sediment Characteristics: GREY COLOUR

Macrophytes: none sparce common abundant CHARA

Algae: none sparce common abundant SINGULAR COLONIAL ALGAE

Invertebrates: MIDGE CLAMS ZEBRA MUSSELS

Notes: CALCIFIED CHARA

3) Location: Couchiching - SAME AS ABOVE

Depth: 2.1m Sampler Fullness: 5/5 Sample Bottles: 1-SNOW

Sediment Type: Silty - OOZE Odour: Sulphur

Sediment Characteristics: GREY COLOUR

Macrophytes: none sparce common abundant CHARA

Algae: none sparce common abundant

Invertebrates: MIDGE, ZEBRA MUSSELS, AMPHIPOD

Notes: CALCIFIED CHARA

Addition Information: COVER = 90% CHARA

4) 5/5 CHARA NO SMELL GREY SILTY OOZE

Collector: HAWK Notes By: Melissa

LAKE
Couchiching

[illegible]
STN #10

1) Location: Couchiching - [illegible] shore in centre of Cunningham Bay

Depth: [illegible] Sampler Fullness: 5/5 Sample Bottles: [illegible]

Sediment Type: [illegible] Odour: [illegible]

Sediment Characteristics: [illegible]

Macrophytes: none sparce common abundant CHARA

Algae: none sparce common abundant

Invertebrates: WORMS, HEXAGENIA, MIDGE, AMPHIPOD

Notes: [illegible] LOTS OF DEAD SNAILS

2) Location: Couchiching, Same as Above

Depth: 18m Sampler Fullness: 4/5 Sample Bottles: 1 - SNOW

Sediment Type: [illegible] - OOZE Odour: NONE

Sediment Characteristics: [illegible]

Macrophytes: none sparce common abundant CHARA

Algae: none sparce common abundant

Invertebrates: DRAGON FLY, HEXAGENIA, MIDGE, AMPHIPODS, WORMS, ZEBRA [illegible]

Notes: [illegible] CHARA LOTS OF DEAD SNAILS

3) Location: Couchiching - Same as Above

Depth: [illegible] Sampler Fullness: 4/5 Sample Bottles: [illegible] SNOW

Sediment Type: [illegible] Odour: NONE

Sediment Characteristics: GREY [illegible]

Macrophytes: none sparce common abundant

Algae: none sparce common abundant

Invertebrates: WORMS, HEXAGENIA, MIDGE, ZEBRA MUSSELS, CRAYFISH, AMPHIPOD

Notes: [illegible]

Addition Information: [illegible]

[illegible] 4/5 [illegible] ABOVE

Collector: HAWK Notes By: MELISSA

Couchching

MAY 30th /9

STN# 11

1) Location: Couchching - 430m offshore (North of Sandy Pt. [illegible])

Depth: [illegible] Sampler Fullness: [illegible] Sample Bottles: [illegible]

Sediment Type: [illegible] Odour: [illegible]

Sediment Characteristics: [illegible]

Macrophytes: none sparce common abundant CHARA

Algae: none sparce common abundant

Invertebrates: MIDGE, SNAILS, DRAGONFLY, HEXEGENIA, [illegible] MUSSELS

Notes: COLLECTED CHARA, LOTS OF DEAD SNAILS, CADDISFLY

2) Location: [illegible]

Depth: 20m Sampler Fullness: [illegible] Sample Bottles: 1-SNOW

Sediment Type: [illegible] Odour: [illegible]

Sediment Characteristics: [illegible]

Macrophytes: none sparce common abundant CHARA

Algae: none sparce common abundant

Invertebrates: [illegible] MUSSELS, HEXEGENIA, CADDISH, MIDGE

Notes: [illegible] CHARA, LOTS OF DEAD SNAILS

3) Location: [illegible]

Depth: 20m Sampler Fullness: 5/5 Sample Bottles: 1-SNOW

Sediment Type: [illegible] Odour: NONE

Sediment Characteristics: [illegible]

Macrophytes: none sparce common abundant

Algae: none sparce common abundant

Invertebrates: CRAYFISH, ZEBRA MUSSELS, MIDGE, HEXEGENIA, CADDISFLY

Notes: [illegible] LOTS OF DEAD SNAILS

Addition Information: [illegible]

4) [illegible]

Collector: HANK Notes By: Melissa

LAKE
Couchiching

[illegible]/30/94

STN # 12

1) Location: [illegible] 120 [illegible] 5263

Depth: [illegible] Sampler Fullness: [illegible] Sample Bottles: [illegible]

Sediment Type: [illegible] Odour: [illegible]

Sediment Characteristics: [illegible]

Macrophytes: none sparce common abundant [illegible]

Algae: none sparce common abundant

Invertebrates: [illegible]

Notes: [illegible]

2) Location: [illegible]

Depth: 17 [illegible] Sampler Fullness: [illegible] Sample Bottles: 1-SNOW

Sediment Type: [illegible] Odour: NONE

Sediment Characteristics: [illegible]

Macrophytes: none sparce common abundant CHARA

Algae: none sparce common abundant

Invertebrates: [illegible]

Notes: [illegible]

3) Location: [illegible]

Depth: [illegible] Sampler Fullness: [illegible] Sample Bottles: 1-SNOW

Sediment Type: [illegible] Odour: SLIGHT [illegible]

Sediment Characteristics: [illegible]

Macrophytes: none sparce common abundant

Algae: none sparce common abundant

Invertebrates: [illegible] CLAMS [illegible]

Notes: [illegible]

Addition Information: [illegible]

[illegible]

Collector: [illegible] Notes By: Melissa

LAKE
Couchiching

MAY 201

STN# 13

1) Location: Couchiching - 125m East of Floral Pt

Depth: [illegible] Sampler Fullness: [illegible] Sample Bottles: [illegible]

Sediment Type: [illegible] CLAY Odour: [illegible]

Sediment Characteristics: TAN [illegible] GREY [illegible]

Macrophytes: none sparce common abundant [illegible]

Algae: none sparce common abundant

Invertebrates: [illegible] AMP-PODS, ZEBRA

Notes: [illegible]

2) Location: [illegible]

Depth: [illegible] Sampler Fullness: [illegible] Sample Bottles: [illegible]

Sediment Type: BROWN SILT OVER [illegible] Odour: NONE

Sediment Characteristics: [illegible]

Macrophytes: none sparce common abundant CHARA

Algae: none sparce common abundant

Invertebrates: [illegible]

Notes: [illegible] CHARA [illegible]

3) Location: [illegible]

Depth: 1.3m Sampler Fullness: [illegible] Sample Bottles: [illegible]

Sediment Type: BROWN SILT OVER SANDY CLAY Odour: NONE

Sediment Characteristics: TAN [illegible] GREY [illegible]

Macrophytes: none sparce common abundant

Algae: none sparce common abundant

Invertebrates: ZEBRA [illegible] AMP-POD

Notes: [illegible]

Addition Information: [illegible]

[illegible] BROWN [illegible] GREY [illegible] NO ODOUR, CHARA

Collector: [illegible] Notes By: [illegible]

LAKE
Couchiching

STN # 14

1) Location: Couchiching - 80m off of YMCA camp to the North

Depth: 3.2m Sampler Fullness: 5/5 Sample Bottles: [illegible]

Sediment Type: [illegible] Odour: NONE

Sediment Characteristics: [illegible]

Macrophytes: none sparce common abundant CHARA TUBERS

Algae: none sparce common abundant

Invertebrates: Dead snails, DRAGONFLY, MIDGE, ZEBRA MUSSELS, MAYFLY

Notes: [illegible]

2) Location: Couchiching - [illegible]

Depth: 3.2m Sampler Fullness: 5/5 Sample Bottles: [illegible]

Sediment Type: [illegible] Odour: CHARA

Sediment Characteristics:

Macrophytes: none sparce common abundant CHARA TUBERS

Algae: none sparce common abundant

Invertebrates: Dead snails, [illegible]

Notes: ORGANIC DEBRIS

3) Location: [illegible]

Depth: 3.2m Sampler Fullness: 5/5 Sample Bottles: [illegible]

Sediment Type: [illegible] Odour: NONE

Sediment Characteristics: [illegible]

Macrophytes: none sparce common abundant [illegible]

Algae: none sparce common abundant

Invertebrates: DEAD SNAILS, MIDGE, WORMS

Notes:

Addition Information: [illegible]

4) [illegible]

Collector: [illegible] Notes By: Melissa

LAKE
Couchiching

STN #

1) Location: [illegible] - 1.2K NW of Geneva Park Pt.
Depth: [illegible] Sampler Fullness: 5/5 Sample Bottles: [illegible]
Sediment Type: [illegible] Odour: [illegible]
Sediment Characteristics: [illegible]
Macrophytes: none sparce common abundant [illegible]
Algae: none sparce common abundant [illegible]
Invertebrates: [illegible]
Notes: [illegible]

2) Location: [illegible]
Depth: [illegible] Sampler Fullness: 5/5 Sample Bottles: [illegible]
Sediment Type: [illegible] Odour: [illegible]
Sediment Characteristics: [illegible]
Macrophytes: none sparce common abundant [illegible]
Algae: none sparce common abundant [illegible]
Invertebrates: [illegible]
Notes: [illegible]

3) Location: [illegible]
Depth: [illegible] Sampler Fullness: 5/5 Sample Bottles: [illegible]
Sediment Type: [illegible] Odour: NONE
Sediment Characteristics: [illegible]
Macrophytes: none sparce common abundant [illegible]
Algae: none sparce common abundant [illegible]
Invertebrates: [illegible]
Notes: [illegible]

Addition Information: [illegible]

Collector: [illegible] Notes By: [illegible]

LAKE
Couchiching

JUNE 0/14
SSN #16

1) Location: Couchiching – 115m off of [illegible]

Depth: [illegible] Sampler Fullness: [illegible] Sample Bottles: [illegible]

Sediment Type: [illegible] Odour: [illegible]

Sediment Characteristics: [illegible]

Macrophytes: none sparce common abundant [illegible]

Algae: none sparce common abundant

Invertebrates: [illegible] MUSSEL, AMPHIPOD

Notes:

2) Location: [illegible]

Depth: [illegible] Sampler Fullness: [illegible] Sample Bottles: [illegible]

Sediment Type: [illegible] Odour: [illegible]

Sediment Characteristics:

Macrophytes: none sparce common abundant [illegible]

Algae: none sparce common abundant

Invertebrates: [illegible]

Notes:

3) Location: [illegible]

Depth: [illegible] Sampler Fullness: [illegible] Sample Bottles: [illegible]

Sediment Type: [illegible] Odour: [illegible]

Sediment Characteristics: [illegible]

Macrophytes: none sparce common abundant [illegible]

Algae: none sparce common abundant

Invertebrates: ZEBRA MUSSELS, [illegible] MAYFLY, AMPHIPOD, DAMSELFLY, DRAGONFLY

Notes: [illegible]

Addition Information: [illegible]

[illegible]

Collector: [illegible] Notes By: [illegible]

LAKE Couchiching

STN # 17

1) Location: Couchiching - 435 PERPENDICULAR TO CASINO RAMA WATER TREAT

Depth: [illegible] Sampler Fullness: [illegible] Sample Bottles: [illegible]

Sediment Type: [illegible] Odour: [illegible]

Sediment Characteristics: [illegible]

Macrophytes: none sparce common abundant

Algae: none sparce common abundant

Invertebrates: HEXEGENIA DEAD SNAILS [illegible]

Notes: [illegible] PLANTON MIDGE

2) Location: [illegible]

Depth: 68m Sampler Fullness: [illegible] Sample Bottles: [illegible]

Sediment Type: [illegible] Odour:

Sediment Characteristics: [illegible]

Macrophytes: none sparce common abundant

Algae: none sparce common abundant

Invertebrates: FISHFLY DEAD SNAILS [illegible] HEXEGENIA [illegible]

Notes: [illegible] PLANTON MIDGE, [illegible]

3) Location: [illegible]

Depth: [illegible] Sampler Fullness: [illegible] Sample Bottles: [illegible]

Sediment Type: [illegible] Odour: NONE

Sediment Characteristics: [illegible]

Macrophytes: none sparce common abundant

Algae: none sparce common abundant

Invertebrates: [illegible]

Notes: [illegible]

Addition Information: [illegible]

[illegible]

[illegible]

Collector: Hawk Notes By: [illegible]

Lite C
Couchiching

STN #18

1) Location: Couchiching - 110m off of mouth of Sucker Creek

Depth: 1.4m Sampler Fullness: 3/5 Sample Bottles: 1-SNOW

Sediment Type: Silty SAND Odour: [illegible]

Sediment Characteristics: ORGANIC DEBRIS HARD CLAY IN BOTTOM

Macrophytes: none sparce common abundant CHARA DUCKWEED - (LITTLE BIT) ELODE [illegible]

Algae: none sparce common abundant

Invertebrates: MIDGE, CLAM, WORMS, AMPHIPOD

Notes: lots of MIDGE

2) Location: COUCHICHING - SAME AS ABOVE

Depth: 1.4m Sampler Fullness: 4/5 Sample Bottles: 1-SNOW

Sediment Type: Silty SAND Odour: [illegible]

Sediment Characteristics: SOME HARD CLAY

Macrophytes: none sparce common abundant CHARA DUCKWEED (SPARSE)

Algae: none sparce common abundant

Invertebrates: MIDGE, WORMS

Notes: lots of MIDGE

3) Location: [illegible] - SAME AS ABOVE

Depth: 1.4 Sampler Fullness: 4/5 Sample Bottles: 1-SNOW

Sediment Type: Silty - SAND Odour: sulphur (slight)

Sediment Characteristics: [illegible] lots of [illegible]

Macrophytes: none sparce common abundant

Algae: none sparce common abundant

Invertebrates: [illegible]

Notes: [illegible]

Addition Information: [illegible]

[illegible] slight sulp[illegible]

Collector: HANK Notes By: Melissa

LAKE
Couchiching

STN #19

1) Location: Couchiching - 400 m South of NADIE ISLAND

Depth: 18 m Sampler Fullness: 5/5 Sample Bottles: [illegible]

Sediment Type: [illegible] Odour: [illegible]

Sediment Characteristics: [illegible]

Macrophytes: none sparce common abundant CHARA ELODEA (sparce)

Algae: none sparce common abundant

Invertebrates: SNAILS, zebra mussels, ISOPODS, midge, amphipod

Notes:

2) Location: Couchiching - Same as ABOVE

Depth: 18 m Sampler Fullness: 5/5 Sample Bottles: 1 - Snow

Sediment Type: [illegible] Odour: [illegible]

Sediment Characteristics: [illegible]

Macrophytes: none sparce common abundant [illegible]

Algae: none sparce common abundant

Invertebrates: SNAILS, midge, ISOPODS, AMPHIPODS, ZEBRA MUSSELS

Notes:

3) Location: Couchiching - [illegible]

Depth: 18 m Sampler Fullness: 4/5 Sample Bottles: 1 - [illegible]

Sediment Type: [illegible] Odour: [illegible]

Sediment Characteristics: [illegible]

Macrophytes: none sparce common abundant [illegible]

Algae: none sparce common abundant

Invertebrates: Amphipods, [illegible] SNAILS, ZEBRA MUSSELS

Notes:

Addition Information: [illegible]

Collector: [illegible] Notes By: [illegible]

Conchichuan

STN #20

1) Location: Conchichuan - 300m off of Moose Beach

Depth: [illegible] Sampler Fullness: [illegible] Sample Bottles: [illegible]

Sediment Type: [illegible] Odour: None

Sediment Characteristics: [illegible]

Macrophytes: none sparce common abundant Chara

Algae: none sparce common abundant

Invertebrates: Zebra [illegible]

Notes: [illegible]

2) Location: [illegible]

Depth: [illegible] Sampler Fullness: 5/5 Sample Bottles: 1-snow

Sediment Type: [illegible] Odour: Sulphur

Sediment Characteristics: [illegible]

Macrophytes: none sparce common abundant Chara

Algae: none sparce common abundant

Invertebrates: [illegible]

Notes:

3) Location: [illegible]

Depth: Sampler Fullness: 5/5 Sample Bottles: [illegible]

Sediment Type: [illegible] Odour: [illegible]

Sediment Characteristics: Grey colour

Macrophytes: none sparce common abundant

Algae: none sparce common abundant

Invertebrates: [illegible] Caddisfly

Notes:

Addition Information: [illegible]

[illegible] fish

Collector: HAWK Notes By: [illegible]

LAKE
Couchiching

June 2/97
STN# 2

1) Location: [illegible]

Depth: [illegible] Sampler Fullness: [illegible] Sample Bottles: [illegible]

Sediment Type: [illegible] Odour: [illegible]

Sediment Characteristics: [illegible]

Macrophytes: none sparce common abundant [illegible]

Algae: none sparce common abundant [illegible]

Invertebrates: GRAYFISH, [illegible]

Notes: [illegible]

2) Location: [illegible]

Depth: [illegible] Sampler Fullness: [illegible] Sample Bottles: [illegible]

Sediment Type: [illegible] Odour: [illegible]

Sediment Characteristics: [illegible]

Macrophytes: none sparce common abundant [illegible]

Algae: none sparce common abundant [illegible]

Invertebrates: [illegible]

Notes: [illegible]

3) Location: [illegible]

Depth: [illegible] Sampler Fullness: [illegible] Sample Bottles: [illegible]

Sediment Type: [illegible] Odour: [illegible]

Sediment Characteristics: [illegible]

Macrophytes: none sparce common abuncant [illegible]

Algae: none sparce common abundant [illegible]

Invertebrates: [illegible]

Notes: [illegible]

Addition Information: [illegible]

Collector: [illegible] Notes By: [illegible]

Appendix L

Appendix L - Raw Benthic Macroinvertebrate Data

Table L-1. Total numbers (#/0.025m^2) of benthic invertebrates from 21 stations in Lake Couchiching

Station	1	1	1	2	2	2	3	3	3	4	4	4
Replicate	1	2	3	1	2	3	1	2	3	1	2	3
Date	97.05.28	97.05.28	97.05.28	97.05.28	97.05.28	97.05.28	97.05.28	97.05.28	97.05.28	97.05.28	97.05.28	97.05.28
Original % Subsampled	25	50	25	50	25	25	25	25	25	25	25	25
TAXA LIST												
ANNELIDA:HIRUDINEA												
ERPOBDELLIDAE:(juveniles)												
Mooreobdella fervida												
Nephelopsis obscura					4							
GLOSSIPHONIIDAE:												
Alboglassiphonia heteroclita												
Desserobdella phalera							4					
Glossiphonia complanata												
Helobdella elongata		2										
Helobdella fusca												
Helobdella triserialis												4
ANNELIDA:OLIGOCHAETA												
ENCHYTRAEIDAE:												
NAIDIDAE:												
Nais communis												
Ophidonais serpentina												
SPARGANOPHILIDAE:												
Sparganophilus eiseni			4									
TUBIFICIDAE:												
Immatures with hairs	4					4	4		4	12	16	28
Immatures without hairs												
Aulodrilus pigueti												
Aulodrilus pluriseta												
Ilyodrilus templetoni												
Limnodrilus clarapedianus												
Limnodrilus hoffmeisteri												
Potamothrix bavaricus	4					24		4		8	8	32
ANNELIDA:POLYCHAETA												
Manayunkia speciosa												
ACARINA:												

Table L-1. Total numbers (#/0.025m^2) of benthic invertebrates from 21 stations in Lake Couchiching

Station	1	1	1	2	2	2	3	3	3	4	4	4
Replicate	1	2	3	1	2	3	1	2	3	1	2	3
Date	97.05.28	97.05.28	97.05.28	97.05.28	97.05.28	97.05.28	97.05.28	97.05.28	97.05.28	97.05.28	97.05.28	97.05.28
Original % Subsampled	25	50	25	50	25	25	25	25	25	25	25	25
Albia												
Arrenurus										4		
Hygrobates		4	8						4	12	8	28
Konikea												
Lebertia								4	4			
Limnesia								4				
Unionicola												
CRUSTACEA												
AMPHIPODA:												
GAMMARIDAE:												
Gammarus fasciatus												
Gammarus pseudolimnaeus	8		24		4	4			4	16		12
HYALELLIDAE:												
Hyalella azteca	280	34	748	92	288	40	612	324	392	300	132	256
CLADOCERA:												
CHYDORIDAE:												
Eurycercus				2	8					12	20	32
DECAPODA:												
CAMBARIDAE:												
Orconectes virilis									4			
ISOPODA:												
ASELLIDAE:												
Caecidotea intermedius	16				12	8						
Caecidotea racovitzai			76									
Lirceus lineatus			48									
INSECTA:												
COLEOPTERA:												
ELMIDAE:												
Stenelmis												
DIPTERA:												
CERATOPOGONIDAE:				2		4					4	28
CHAOBORIDAE:												

Table L-1. Total numbers (#/0.025m^2) of benthic invertebrates from 21 stations in Lake Couchiching

Station	1	1	1	2	2	2	3	3	3	4	4	4
Replicate	1	2	3	1	2	3	1	2	3	1	2	3
Date	97.05.28	97.05.28	97.05.28	97.05.28	97.05.28	97.05.28	97.05.28	97.05.28	97.05.28	97.05.28	97.05.28	97.05.28
Original % Subsampled	25	50	25	50	25	25	25	25	25	25	25	25
Chaoborus punctipennis									4			
CHIRONOMIDAE:												
CHIRONOMINAE:												
Chironomus	24	8	4				76	32	60			
Cladotanytarsus		2								56		56
Cryptochironomus		8										
Dicrotendipes	12	6	80	6	56	4	64	52	76	72	8	28
Microtendipes										4		
Parachironomus	4			2								
Paracladopelma				2								
Paratanytarsus										16	28	16
Paratendipes	8	4	32		196	16			12	40	40	140
Phaenopsectra flavipes					4							
Polypedilum				14		4				36	8	64
Pseudochironomus										8		
Stempellina		2								4	12	
Tanytarsus	44	62	48	22	52	4			8	20	8	16
Tribelos jucundum	16			18		8				8	20	16
Zavreleilla												
ORTHOCLADIINAE:												
Cricotopus	4		8	16	8		20	8	20			4
Epoicocladius												
Psectrocladius	4	4		6	36		12	16	8	4		8
Thienemanniella												
TANYPODINAE:												
Ablabesmyia	8		8	12	72		48	48	44	40	32	68
Clinotanypus pinguis				4							4	
Procladius	8	24	32	14	28					80	20	72
EMPIDIDAE:												
Hemerodromia												
EPHEMEROPTERA:												
BAETIDAE:												

Table L-1. Total numbers (#/0.025m^2) of benthic invertebrates from 21 stations in Lake Couchiching

Station	1	1	1	2	2	2	3	3	3	4	4	4
Replicate	1	2	3	1	2	3	1	2	3	1	2	3
Date	97.05.28	97.05.28	97.05.28	97.05.28	97.05.28	97.05.28	97.05.28	97.05.28	97.05.28	97.05.28	97.05.28	97.05.28
Original % Subsampled	25	50	25	50	25	25	25	25	25	25	25	25
Callibaetis			4	2				4		4	4	8
CAENIDAE:												
Caenis punctata	92	38	172	2			24	24	12	4	4	4
EPHEMERELLIDAE:												
Eurylophella										4	12	
EPHEMERIDAE:												
Hexagenia limbata		2				4						4
LEPTOPHLEBIIDAE:												
Leptophlebia												
MEGALOPTERA:												
SIALIDAE:												
Sialis												
ODONATA:												
COENAGRIONIDAE:												
Enallagma sp.		2							4			
Enallagma civile			4						4			
Enallagma hageni			20									
CORDULIIDAE:												
Tetragoneuria cynosura												
TRICHOPTERA:												
HYDROPTILIDAE:												
Orthotrichia			4									
LEPTOCERIDAE:												
Ceraclea						4	16	8	4			4
Mystacides sepulchralis	4									4		
Nectopsyche albida								4		8	12	16
Oecetis inconspicua-group	4	6		4				4		8	16	20
Triaenodes	4		4					4				
POLYCENTROPODIDAE												
Polycentropus								4				
MOLLUSCA:BIVALVIA:												
DREISSENIDAE:												

Table L-1. Total numbers (#/0.025m^2) of benthic invertebrates from 21 stations in Lake Couchiching

Station	1	1	1	2	2	2	3	3	3	4	4	4
Replicate	1	2	3	1	2	3	1	2	3	1	2	3
Date	97.05.28	97.05.28	97.05.28	97.05.28	97.05.28	97.05.28	97.05.28	97.05.28	97.05.28	97.05.28	97.05.28	97.05.28
Original % Subsampled	25	50	25	50	25	25	25	25	25	25	25	25
Dreissena polymorpha	28	6	312	144	1016	280	276	412	500	200	208	448
SPHAERIIDAE:												
Pisidium			4									
Sphaerium simile												
Sphaerium striatinum		2	4									
UNIONIDAE:												
Lampsilis radiata												
MOLLUSCA:GASTROPODA:												
ANCYLIDAE:												
Ferrissia												
HYDROBIIDAE												
Amnicola limosa	4	2	12	46	164	52	44	16	16	44	168	136
Cincinnatia cincinnatiensis												
Probythinia lacustris												
PHYSIDAE:												
Physella gyrina			8		4					12	8	12
PLANORBIDAE:												
Gyraulus circumstriatus				2	8	4	8	4	4	4	20	
Helisoma anceps												
Promenetus exacuous			4			8	8	12	12			
VALVATIDAE:												
Valvata tricarinata						4		12	8	36	56	16
VIVIPARIDAE:												
Viviparus georgianus				16	8	8						
NEMATODA:	12	2	8			12				4		4
PLATYHELMINTHES:												
Dugesia tigrina			4				8					
Hydrolimax griseus												
Total Number of Taxa	22	20	27	21	18	20	15	21	23	32	26	30
Total Number of Specimens	592	220	1684	428	1968	496	1224	1000	1208	1084	876	1580

Table L-1. Total numbers (#/0.025m^2) of benthic invertebrates from 21 stations in Lake Couchiching

Station	5	5	5	6	6	6	7	7	7	8	8	8
Replicate	1	2	3	1	2	3	1	2	3	1	2	3
Date	97.05.28	97.05.28	97.05.28	97.05.28	97.05.28	97.05.28	97.05.29	97.05.29	97.05.29	97.05.29	97.05.29	97.05.29
Original % Subsampled	50	25	25	50	50	50	25	25	25	25	25	25
TAXA LIST												
ANNELIDA:HIRUDINEA												
ERPOBDELLIDAE:(juveniles)												
Mooreobdella fervida							4					4
Nephelopsis obscura												
GLOSSIPHONIIDAE:												
Alboglossiphonia heteroclita												
Desserobdella phalera									4			
Glossiphonia complanata												
Helobdella elongata						2						
Helobdella fusca												
Helobdella triserialis												
ANNELIDA:OLIGOCHAETA												
ENCHYTRAEIDAE:												
NAIDIDAE:												
Nais communis												
Ophidonais serpentina												
SPARGANOPHILIDAE:												
Sparganophilus eiseni				6		14						
TUBIFICIDAE:												
Immatures with hairs		4					4					
Immatures without hairs				4				4				
Aulodrilus pigueti	8	12										
Aulodrilus pluriseta												
Ilyodrilus templetoni												
Limnodrilus clarapedianus												
Limnodrilus hoffmeisteri					2						4	4
Potamothrix bavaricus												
ANNELIDA:POLYCHAETA												
Manayunkia speciosa												
ACARINA:												

Table L-1. Total numbers (#/0.025m^2) of benthic invertebrates from 21 stations in Lake Couchiching

Station	5	5	5	6	6	6	7	7	7	8	8	8
Replicate	1	2	3	1	2	3	1	2	3	1	2	3
Date	97.05.28	97.05.28	97.05.28	97.05.28	97.05.28	97.05.28	97.05.29	97.05.29	97.05.29	97.05.29	97.05.29	97.05.29
Original % Subsampled	50	25	25	50	50	50	25	25	25	25	25	25
Albia												
Arrenurus							4		4	4		
Hygrobates							8		4		4	12
Konikea												
Lebertia										4		
Limnesia	2										4	
Unionicola						2	4					
CRUSTACEA												
AMPHIPODA:												
GAMMARIDAE:												
Gammarus fasciatus												
Gammarus pseudolimnaeus										4	8	
HYALELLIDAE:												
Hyalella azteca					4		252	88	232	240	464	816
CLADOCERA:												
CHYDORIDAE:												
Eurycercus										4		
DECAPODA:												
CAMBARIDAE:												
Orconectes virilis										4		4
ISOPODA:												
ASELLIDAE:												
Caecidotea intermedius												
Caecidotea racovitzai												
Lirceus lineatus										4	4	8
INSECTA:												
COLEOPTERA:												
ELMIDAE:												
Stenelmis	2											
DIPTERA:												
CERATOPOGONIDAE:	6		4				8			4		4
CHAOBORIDAE:												

Table L-1. Total numbers (#/0.025m^2) of benthic invertebrates from 21 stations in Lake Couchiching

Station	5	5	5	6	6	6	7	7	7	8	8	8
Replicate	1	2	3	1	2	3	1	2	3	1	2	3
Date	97.05.28	97.05.28	97.05.28	97.05.28	97.05.28	97.05.28	97.05.29	97.05.29	97.05.29	97.05.29	97.05.29	97.05.29
Original % Subsampled	50	25	25	50	50	50	25	25	25	25	25	25
Chaoborus punctipennis	14	12	12									
CHIRONOMIDAE:												
CHIRONOMINAE:												
Chironomus	6		44									
Cladotanytarsus			16									
Cryptochironomus											4	12
Dicrotendipes	4	12			2		96	20	96	104	144	148
Microtendipes												
Parachironomus												
Paracladopelma				2								
Paratanytarsus							4					
Paratendipes	10			12	2	14	28	44	28	44	32	112
Phaenopsectra flavipes												
Polypedilum	2	4		14		2	4	4	4	8	12	8
Pseudochironomus												4
Stempellina								4	4	16		
Tanytarsus	42	40	48	2		2	8	24	24	12	36	40
Tribelos jucundum	2		4					8		8	40	24
Zavreleilla												
ORTHOCLADIINAE:												
Cricotopus							4		4		8	8
Epoicocladius				2							4	
Psectrocladius		4	4		4		4	4	8	12	20	40
Thienemanniella												
TANYPODINAE:												
Ablabesmyia				2		6	20	24	36	16	20	32
Clinotanypus pinguis									4	8	8	
Procladius	16	12	12	10	6	14	8	28	32	12	36	32
EMPIDIDAE:												
Hemerodromia									4			4
EPHEMEROPTERA:												
BAETIDAE:												

Table L-1. Total numbers (#/0.025m^2) of benthic invertebrates from 21 stations in Lake Couchiching

Station	5	5	5	6	6	6	7	7	7	8	8	8
Replicate	1	2	3	1	2	3	1	2	3	1	2	3
Date	97.05.28	97.05.28	97.05.28	97.05.28	97.05.28	97.05.28	97.05.29	97.05.29	97.05.29	97.05.29	97.05.29	97.05.29
Original % Subsampled	50	25	25	50	50	50	25	25	25	25	25	25
Callibaetis										4		
CAENIDAE:												
Caenis punctata	2			4		10	28	104	88	44	44	200
EPHEMERELLIDAE:												
Eurylophella								8			4	12
EPHEMERIDAE:												
Hexagenia limbata	2	8	24	24	20	24		28	4	4	4	
LEPTOPHLEBIIDAE:												
Leptophlebia												
MEGALOPTERA:												
SIALIDAE:												
Sialis												
ODONATA:												
COENAGRIONIDAE:												
Enallagma sp.												
Enallagma civile												
Enallagma hageni										4		
CORDULIIDAE:												
Tetragoneuria cynosura								4				
TRICHOPTERA:												
HYDROPTILIDAE:												
Orthotrichia												
LEPTOCERIDAE:												
Ceraclea												8
Mystacides sepulchralis					2							
Nectopsyche albida						2	4		4	4	4	4
Oecetis inconspicua-group							4		4	4	8	
Triaenodes												
POLYCENTROPODIDAE												
Polycentropus						2	4				12	16
MOLLUSCA:BIVALVIA:												
DREISSENIDAE:												

Table L-1. Total numbers (#/0.025m²) of benthic invertebrates from 21 stations in Lake Couchiching

Station	5	5	5	6	6	6	7	7	7	8	8	8
Replicate	1	2	3	1	2	3	1	2	3	1	2	3
Date	97.05.28	97.05.28	97.05.28	97.05.28	97.05.28	97.05.28	97.05.29	97.05.29	97.05.29	97.05.29	97.05.29	97.05.29
Original % Subsampled	50	25	25	50	50	50	25	25	25	25	25	25
Dreissena polymorpha	660	1724	120	36	122	82	180	88	208	284	132	344
SPHAERIIDAE:												
Pisidium	42	48	12	2	2	4					4	12
Sphaerium simile												4
Sphaerium striatinum			4									
UNIONIDAE:		4										
Lampsilis radiata												
MOLLUSCA:GASTROPODA:												
ANCYLIDAE:												
Ferrissia								8				
HYDROBIIDAE												
Amnicola limosa	4	8	36	4	10	4	32		32	40	40	76
Cincinnatia cincinnatiensis	4	8										
Probythinia lacustris			4									
PHYSIDAE:												
Physella gyrina					2					8	4	20
PLANORBIDAE:												
Gyraulus circumstriatus	6	8					12		36			
Helisoma anceps	2	4										
Promenetus exacuous												
VALVATIDAE:												
Valvata tricarinata	64	108	32						12			
VIVIPARIDAE:												
Viviparus georgianus												
NEMATODA:												
PLATYHELMINTHES:												
Dugesia tigrina						2			4			4
Hydrolimax griseus												
Total Number of Taxa	21	17	15	14	12	16	23	17	24	27	28	30
Total Number of Specimens	900	2020	376	124	178	186	724	492	880	904	1108	2016

Table L-1. Total numbers (#/0.025m^2) of benthic invertebrates from 21 stations in Lake Couchiching

Station	9	9	9	10	10	10	11	11	11	12	12	12
Replicate	1	2	3	1	2	3	1	2	3	1	2	3
Date	97.05.29	97.05.29	97.05.29	97.05.30	97.05.30	97.05.30	97.05.30	97.05.30	97.05.30	97.05.30	97.05.30	97.05.30
Original % Subsampled	25	25	50	25	25	25	25	25	25	25	25	25
TAXA LIST												
ANNELIDA:HIRUDINEA												
ERPOBDELLIDAE:(juveniles)												
Mooreobdella fervida												
Nephelopsis obscura							4					
GLOSSIPHONIIDAE:												
Alboglossiphonia heteroclita												
Desserobdella phalera									4			
Glossiphonia complanata	4											
Helobdella elongata												
Helobdella fusca												
Helobdella triserialis												
ANNELIDA:OLIGOCHAETA												
ENCHYTRAEIDAE:												
NAIDIDAE:												
Nais communis												
Ophidonais serpentina												
SPARGANOPHILIDAE:												
Sparganophilus eiseni				8	8	8						
TUBIFICIDAE:												
Immatures with hairs												
Immatures without hairs		4					12		4			
Aulodrilus pigueti												
Aulodrilus pluriseta												
Ilyodrilus templetoni						8						
Limnodrilus clarapedianus		4						4				
Limnodrilus hoffmeisteri							4		4			
Potamothrix bavaricus												
ANNELIDA:POLYCHAETA												
Manayunkia speciosa												
ACARINA:												

Table L-1. Total numbers (#/0.025m^2) of benthic invertebrates from 21 stations in Lake Couchiching

Station	9	9	9	10	10	10	11	11	11	12	12	12
Replicate	1	2	3	1	2	3	1	2	3	1	2	3
Date	97.05.29	97.05.29	97.05.29	97.05.30	97.05.30	97.05.30	97.05.30	97.05.30	97.05.30	97.05.30	97.05.30	97.05.30
Original % Subsampled	25	25	50	25	25	25	25	25	25	25	25	25
Albia												
Arrenurus									16			
Hygrobates	16	8			4			4				
Konikea	4	4			8			8				
Lebertia	4	4							4			
Limnesia	4							4				
Unionicola												
CRUSTACEA												
AMPHIPODA:												
GAMMARIDAE:												
Gammarus fasciatus												
Gammarus pseudolimnaeus	4											
HYALELLIDAE:												
Hyalella azteca	480	276	66	184	292	316	140	224	208	260	276	132
CLADOCERA:												
CHYDORIDAE:												
Eurycercus												
DECAPODA:												
CAMBARIDAE:												
Orconectes virilis										4		
ISOPODA:												
ASELLIDAE:												
Caecidotea intermedius												
Caecidotea racovitzai												
Lirceus lineatus												
INSECTA:												
COLEOPTERA:												
ELMIDAE:												
Stenelmis												
DIPTERA:												
CERATOPOGONIDAE:	4	32	2	4	16	8	12	4	4	8	12	4
CHAOBORIDAE:												

Table L-1. Total numbers (#/0.025m^2) of benthic invertebrates from 21 stations in Lake Couchiching

Station	9	9	9	10	10	10	11	11	11	12	12	12
Replicate	1	2	3	1	2	3	1	2	3	1	2	3
Date	97.05.29	97.05.29	97.05.29	97.05.30	97.05.30	97.05.30	97.05.30	97.05.30	97.05.30	97.05.30	97.05.30	97.05.30
Original % Subsampled	25	25	50	25	25	25	25	25	25	25	25	25
Chaoborus punctipennis			2									
CHIRONOMIDAE:												
CHIRONOMINAE:												
Chironomus												
Cladotanytarsus		4		4		4				4	8	4
Cryptochironomus		4			8		4		8			
Dicrotendipes	132	80	62	36	116	36	148	136	100	96	92	52
Microtendipes												
Parachironomus												
Paracladopelma												
Paratanytarsus	16			28	20	4	4			8	8	
Paratendipes	60	64	30				20	8	8	8	8	32
Phaenopsectra flavipes												
Polypedilum	12					4	36	20	24		8	4
Pseudochironomus	16	8	4	24	12	24	16		4	8		8
Stempellina					4		4		4			
Tanytarsus	4		4	4	8	12	8	4	4	56	28	4
Tribelos jucundum	12	12		16	16		32	12	20	40	64	68
Zavreleilla									8			
ORTHOCLADIINAE:												
Cricotopus			2		4					8		
Epoicocladius					4							
Psectrocladius	12	8	4		8	4		12		68	32	32
Thienemanniella							4					
TANYPODINAE:												
Ablabesmyia	24	36	6	4	20	4	8	28	40	72	60	20
Clinotanypus pinguis	4	4			4	4	8	4		20	4	4
Procladius	40	8	2	8	8	4	36	20	20	20	28	16
EMPIDIDAE:												
Hemerodromia												
EPHEMEROPTERA:												
BAETIDAE:												

Table L-1. Total numbers (#/0.025m²) of benthic invertebrates from 21 stations in Lake Couchiching

Station	9	9	9	10	10	10	11	11	11	12	12	12
Replicate	1	2	3	1	2	3	1	2	3	1	2	3
Date	97.05.29	97.05.29	97.05.29	97.05.30	97.05.30	97.05.30	97.05.30	97.05.30	97.05.30	97.05.30	97.05.30	97.05.30
Original % Subsampled	25	25	50	25	25	25	25	25	25	25	25	25
Callibaetis	4	12				4		8	8	4		
CAENIDAE:												
Caenis punctata	44	112	18		20	4	108	76	164	12	40	8
EPHEMERELLIDAE:												
Eurylophella							4					
EPHEMERIDAE:												
Hexagenia limbata	4			4	4	8	24	8	36	20	8	16
LEPTOPHLEBIIDAE:												
Leptophlebia												
MEGALOPTERA:												
SIALIDAE:												
Sialis												
ODONATA:												
COENAGRIONIDAE:												
Enallagma sp.	4											
Enallagma civile												
Enallagma hageni												
CORDULIIDAE:												
Tetragoneuria cynosura	4						4	4				
TRICHOPTERA:												
HYDROPTILIDAE:												
Orthotrichia												
LEPTOCERIDAE:												
Ceraclea												
Mystacides sepulchralis					4	4						
Nectopsyche albida	4				12							
Oecetis inconspicua-group	4		2	16	20	8						
Triaenodes												
POLYCENTROPODIDAE												
Polycentropus	4						8		8	20	12	4
MOLLUSCA:BIVALVIA:												
DREISSENIDAE:												

Table L-1. Total numbers (#/0.025m^2) of benthic invertebrates from 21 stations in Lake Couchiching

Station	9	9	9	10	10	10	11	11	11	12	12	12
Replicate	1	2	3	1	2	3	1	2	3	1	2	3
Date	97.05.29	97.05.29	97.05.29	97.05.30	97.05.30	97.05.30	97.05.30	97.05.30	97.05.30	97.05.30	97.05.30	97.05.30
Original % Subsampled	25	25	50	25	25	25	25	25	25	25	25	25
Dreissena polymorpha	600	392	130	360	1120	1224	216	136	224	436	276	96
SPHAERIIDAE:												
Pisidium	4			8	8	4				4		
Sphaerium simile		4										
Sphaerium striatinum		4										
UNIONIDAE:												
Lampsilis radiata												
MOLLUSCA:GASTROPODA:												
ANCYLIDAE:												
Ferrissia												
HYDROBIIDAE												
Amnicola limosa	8	68	26	8	16	4	20	48	20	44	28	20
Cincinnatia cincinnatiensis												
Probythinia lacustris												
PHYSIDAE:												
Physella gyrina	4	8	2		4					8	4	
PLANORBIDAE:												
Gyraulus circumstriatus	4				4	8						
Helisoma anceps	4											
Promenetus exacuous												
VALVATIDAE:												
Valvata tricarinata	4	40	8						4		4	
VIVIPARIDAE:												
Viviparus georgianus												
NEMATODA:												
PLATYHELMINTHES:												
Dugesia tigrina					4					4		
Hydrolimax griseus												
Total Number of Taxa	34	25	17	16	29	23	25	21	25	24	20	18
Total Number of Specimens	1552	1200	370	716	1776	1708	884	772	948	1232	1000	524

Table L-1. Total numbers (#/0.025m^2) of benthic invertebrates from 21 stations in Lake Couchiching

Station	13	13	13	14	14	14	15	15	15	16	16	16
Replicate	1	2	3	1	2	3	1	2	3	1	2	3
Date	97.05.30	97.05.30	97.05.30	97.06.02	97.06.02	97.06.02	97.06.02	97.06.02	97.06.02	97.06.02	97.06.02	97.06.02
Original % Subsampled	25	25	25	25	25	25	50	50	50	25	25	25
TAXA LIST												
ANNELIDA:HIRUDINEA												
ERPOBDELLIDAE:(juveniles)												
Mooreobdella fervida												
Nephelopsis obscura										4		4
GLOSSIPHONIIDAE:												
Alboglossiphonia heteroclita												
Desserobdella phalera												
Glossiphonia complanata												
Helobdella elongata												
Helobdella fusca										4		
Helobdella triserialis												
ANNELIDA:OLIGOCHAETA												
ENCHYTRAEIDAE:												
NAIDIDAE:												
Nais communis												
Ophidonais serpentina												
SPARGANOPHILIDAE:												
Sparganophilus eiseni	4				4				2			
TUBIFICIDAE:												
Immatures with hairs				64	40	176		2				
Immatures without hairs				4		12	8	2				
Aulodrilus pigueti												
Aulodrilus pluriseta							12	4	14			
Ilyodrilus templetoni												
Limnodrilus claraepedianus												
Limnodrilus hoffmeisteri								2				
Potamothrix bavaricus				12	12	36						
ANNELIDA:POLYCHAETA												
Manayunkia speciosa							2	2				
ACARINA:												

Table L-1. Total numbers (#/0.025m^2) of benthic invertebrates from 21 stations in Lake Couchiching

Station	13	13	13	14	14	14	15	15	15	16	16	16
Replicate	1	2	3	1	2	3	1	2	3	1	2	3
Date	97.05.30	97.05.30	97.05.30	97.06.02	97.06.02	97.06.02	97.06.02	97.06.02	97.06.02	97.06.02	97.06.02	97.06.02
Original % Subsampled	25	25	25	25	25	25	50	50	50	25	25	25
Albia												
Arrenurus				4	4					12		
Hygrobates			4	4						4		
Konikea												
Lebertia		4								8		4
Limnesia												
Unionicola												
CRUSTACEA												
AMPHIPODA:												
GAMMARIDAE:												
Gammarus fasciatus												
Gammarus pseudolimnaeus		4				4			2			12
HYALELLIDAE:												
Hyalella azteca	244	120	188	204	144	124				232	176	264
CLADOCERA:												
CHYDORIDAE:												
Eurycercus												
DECAPODA:												
CAMBARIDAE:												
Orconectes virilis												
ISOPODA:												
ASELLIDAE:												
Caecidotea intermedius												
Caecidotea racovitzai												
Lirceus lineatus												
INSECTA:												
COLEOPTERA:												
ELMIDAE:												
Stenelmis												
DIPTERA:												
CERATOPOGONIDAE:	28	4		16	12	12				12	4	8
CHAOBORIDAE:												

Table L-1. Total numbers (#/0.025m²) of benthic invertebrates from 21 stations in Lake Couchiching

Station	13	13	13	14	14	14	15	15	15	16	16	16
Replicate	1	2	3	1	2	3	1	2	3	1	2	3
Date	97.05.30	97.05.30	97.05.30	97.06.02	97.06.02	97.06.02	97.06.02	97.06.02	97.06.02	97.06.02	97.06.02	97.06.02
Original % Subsampled	25	25	25	25	25	25	50	50	50	25	25	25
Chaoborus punctipennis							12	30	42			
CHIRONOMIDAE:												
CHIRONOMINAE:												
Chironomus	4			92	40	108	2	2				
Cladotanytarsus	20	8	8				14	12	2	60	32	36
Cryptochironomus	4	4	4					2	4			
Dicrotendipes	16	12	12	188	164	192				184	80	164
Microtendipes		12	8									
Parachironomus			4									
Paracladopelma		4						2				
Paratanytarsus	12			24		8						4
Paratendipes	8	8	8	28	80	184	4		2	244	16	20
Phaenopsectra flavipes										8		
Polypedilum	4	4			12	12			4	32	20	40
Pseudochironomus											4	
Stempellina											4	4
Tanytarsus	32	12	12	8	44	48	10	2	14	204	64	92
Tribelos jucundum	48	32	36	44	52	40		2				16
Zavreleilla												
ORTHOCLADIINAE:												
Cricotopus										24	8	8
Epoicocladius	4											
Psectrocladius	16	4		8						4		
Thienemanniella												
TANYPODINAE:												
Ablabesmyia	24	12	20	36	20	16	2	2		12		
Clinotanypus pinguis	12	4	4							16	8	16
Procladius	12	4			8	4	2	2	2	60	12	48
EMPIDIDAE:												
Hemerodromia												
EPHEMEROPTERA:												
BAETIDAE:												

Table L-1. Total numbers (#/0.025m^2) of benthic invertebrates from 21 stations in Lake Couchiching

Station	13	13	13	14	14	14	15	15	15	16	16	16
Replicate	1	2	3	1	2	3	1	2	3	1	2	3
Date	97.05.30	97.05.30	97.05.30	97.06.02	97.06.02	97.06.02	97.06.02	97.06.02	97.06.02	97.06.02	97.06.02	97.06.02
Original % Subsampled	25	25	25	25	25	25	50	50	50	25	25	25
Callibaetis										4		
CAENIDAE:												
Caenis punctata	24	8	28	24	4	20				120	52	100
EPHEMERELLIDAE:												
Eurylophella												
EPHEMERIDAE:												
Hexagenia limbata	32	56	28				22	6	10			
LEPTOPHLEBIIDAE:												
Leptophlebia				4								
MEGALOPTERA:												
SIALIDAE:												
Sialis						4						
ODONATA:												
COENAGRIONIDAE:												
Enallagma sp.										4		
Enallagma civile												
Enallagma hageni				4	4						8	12
CORDULIIDAE:												
Tetragoneuria cynosura				4		4					4	
TRICHOPTERA:												
HYDROPTILIDAE:												
Orthotrichia												
LEPTOCERIDAE:												
Ceraclea											4	
Mystacides sepulchralis												
Nectopsyche albida			4	4						12	4	4
Oecetis inconspicua-group		4	4	16	4	12						
Triaenodes												
POLYCENTROPODIDAE												
Polycentropus	4		4	8	4	8						8
MOLLUSCA:BIVALVIA:												
DREISSENIDAE:												

Table L-1. Total numbers (#/0.025m²) of benthic invertebrates from 21 stations in Lake Couchiching

Station	13	13	13	14	14	14	15	15	15	16	16	16
Replicate	1	2	3	1	2	3	1	2	3	1	2	3
Date	97.05.30	97.05.30	97.05.30	97.06.02	97.06.02	97.06.02	97.06.02	97.06.02	97.06.02	97.06.02	97.06.02	97.06.02
Original % Subsampled	25	25	25	25	25	25	50	50	50	25	25	25
Dreissena polymorpha	532	272	316	816	1320	1868	26	328	132	140	128	148
SPHAERIIDAE:												
Pisidium	4						22	30	4	4		
Sphaerium simile												
Sphaerium striatinum												
UNIONIDAE:												
Lampsilis radiata	4							2	2			
MOLLUSCA:GASTROPODA:												
ANCYLIDAE:												
Ferrissia												
HYDROBIIDAE												
Amnicola limosa	52	20	12	24	28	52	76	28	32	52	28	28
Cincinnatia cincinnatiensis												
Probythinia lacustris								14	20			
PHYSIDAE:												
Physella gyrina				4								
PLANORBIDAE:												
Gyraulus circumstriatus												
Helisoma anceps								2	2			
Promenetus exacuous												
VALVATIDAE:												
Valvata tricarinata		4				4	10	16	10			
VIVIPARIDAE:												
Viviparus georgianus												
NEMATODA:	4							8	10			
PLATYHELMINTHES:												
Dugesia tigrina	4	4	4	4	4	16		2				
Hydrolimax griseus						16						
Total Number of Taxa	26	24	20	26	21	24	15	24	19	25	19	22
Total Number of Specimens	1152	620	708	1648	2004	2964	224	504	310	1460	656	1040

Table L-1. Total numbers (#/0.025m^2) of benthic invertebrates from 21 stations in Lake Couchiching

Station	17	17	17	18	18	18	19	19	19	20	20	20
Replicate	1	2	3	1	2	3	1	2	3	1	2	3
Date	97.06.02	97.06.02	97.06.02	97.05.29	97.05.29	97.05.29	97.05.29	97.05.29	97.05.29	97.05.29	97.05.29	97.05.29
Original % Subsampled	100	50	100	25	25	25	25	25	25	25	25	25
TAXA LIST												
ANNELIDA:HIRUDINEA												
ERPOBDELLIDAE:(juveniles)							4					
Mooreobdella fervida									4			
Nephelopsis obscura												
GLOSSIPHONIIDAE:												
Alboglossiphonia heteroclita							4		4			
Desserobdella phalera										4		
Glossiphonia complanata												
Helobdella elongata												
Helobdella fusca												
Helobdella triserialis												
ANNELIDA:OLIGOCHAETA												
ENCHYTRAEIDAE:				4								
NAIDIDAE:												
Nais communis				24	8				8			
Ophidonais serpentina						4						
SPARGANOPHILIDAE:												
Sparganophilus eiseni				4	4	4		4			4	
TUBIFICIDAE:												
Immatures with hairs						4					8	
Immatures without hairs				24	8		8					
Aulodrilus pigueti												
Aulodrilus pluriseta												
Ilyodrilus templetoni												
Limnodrilus clarapedianus							4		4			
Limnodrilus hoffmeisteri				4	8	8	8		4		4	
Potamothrix bavaricus						8						
ANNELIDA:POLYCHAETA												
Manayunkia speciosa												
ACARINA:												

Table L-1. Total numbers (#/0.025m^2) of benthic invertebrates from 21 stations in Lake Couchiching

Station	17	17	17	18	18	18	19	19	19	20	20	20
Replicate	1	2	3	1	2	3	1	2	3	1	2	3
Date	97.06.02	97.06.02	97.06.02	97.05.29	97.05.29	97.05.29	97.05.29	97.05.29	97.05.29	97.05.29	97.05.29	97.05.29
Original % Subsampled	100	50	100	25	25	25	25	25	25	25	25	25
Albia				4								
Arrenurus	1	2	2									
Hygrobates									4	4	8	12
Konikea												
Lebertia			1								12	
Limnesia												
Unionicola												
CRUSTACEA												
AMPHIPODA:												
GAMMARIDAE:												
Gammarus fasciatus							68	52	156			
Gammarus pseudolimnaeus	1	6		12	4	4				8	4	12
HYALELLIDAE:												
Hyalella azteca					12		92	108	244	208	288	364
CLADOCERA:												
CHYDORIDAE:												
Eurycercus												
DECAPODA:												
CAMBARIDAE:												
Orconectes virilis												
ISOPODA:												
ASELLIDAE:												
Caecidotea intermedius												
Caecidotea racovitzai				8	8	12	16	4	16			
Lirceus lineatus							36	12	32		8	4
INSECTA:												
COLEOPTERA:												
ELMIDAE:												
Stenelmis												
DIPTERA:												
CERATOPOGONIDAE:		2	4									4
CHAOBORIDAE:												

Table L-1. Total numbers (#/0.025m^2) of benthic invertebrates from 21 stations in Lake Couchiching

Station	17	17	17	18	18	18	19	19	19	20	20	20
Replicate	1	2	3	1	2	3	1	2	3	1	2	3
Date	97.06.02	97.06.02	97.06.02	97.05.29	97.05.29	97.05.29	97.05.29	97.05.29	97.05.29	97.05.29	97.05.29	97.05.29
Original % Subsampled	100	50	100	25	25	25	25	25	25	25	25	25
Chaoborus punctipennis		2	7									
CHIRONOMIDAE:												
CHIRONOMINAE:												
Chironomus				40	8					4	48	24
Cladotanytarsus				16		4				4		4
Cryptochironomus							4					
Dicrotendipes			1	16	16	8		4	16	28	68	48
Microtendipes					16	12						
Parachironomus												
Paracladopelma			3									
Paratanytarsus						8			4			24
Paratendipes	5	2	10	276	224	348	8	12	4	8	32	96
Phaenopsectra flavipes										4		
Polypedilum					4						4	4
Pseudochironomus				72	16	40				8		
Stempellina		2	1									
Tanytarsus	2	2	3	8						4	20	24
Tribelos jucundum												
Zavreleilla												4
ORTHOCLADIINAE:												
Cricotopus									4	20	12	16
Epoicocladius			1									
Psectrocladius			1						4	8		4
Thienemanniella											12	
TANYPODINAE:												
Ablabesmyia	4	8	2		4					4	4	12
Clinotanypus pinguis											4	
Procladius	8	10	32		4						24	4
EMPIDIDAE:												
Hemerodromia								4				
EPHEMEROPTERA:												
BAETIDAE:												

Table L-1. Total numbers (#/0.025m^2) of benthic invertebrates from 21 stations in Lake Couchiching

Station	17	17	17	18	18	18	19	19	19	20	20	20
Replicate	1	2	3	1	2	3	1	2	3	1	2	3
Date	97.06.02	97.06.02	97.06.02	97.05.29	97.05.29	97.05.29	97.05.29	97.05.29	97.05.29	97.05.29	97.05.29	97.05.29
Original % Subsampled	100	50	100	25	25	25	25	25	25	25	25	25
Callibaetis											4	
CAENIDAE:												
Caenis punctata				24	36	32				8	12	12
EPHEMERELLIDAE:												
Eurylophella										4		
EPHEMERIDAE:												
Hexagenia limbata	11	18	34									
LEPTOPHLEBIIDAE:												
Leptophlebia												
MEGALOPTERA:												
SIALIDAE:												
Sialis	1	2	1									
ODONATA:												
COENAGRIONIDAE:												
Enallagma sp.												
Enallagma civile												
Enallagma hageni								4	4			
CORDULIIDAE:												
Tetragoneuria cynosura												
TRICHOPTERA:												
HYDROPTILIDAE:												
Orthotrichia												
LEPTOCERIDAE:												
Ceraclea									4		4	4
Mystacides sepulchralis				8								
Nectopsyche albida									4	4	4	4
Oecetis inconspicua-group											4	
Triaenodes												
POLYCENTROPODIDAE												
Polycentropus										4		4
MOLLUSCA:BIVALVIA:												
DREISSENIDAE:												

Table L-1. Total numbers (#/0.025m^2) of benthic invertebrates from 21 stations in Lake Couchiching

Station	17	17	17	18	18	18	19	19	19	20	20	20
Replicate	1	2	3	1	2	3	1	2	3	1	2	3
Date	97.06.02	97.06.02	97.06.02	97.05.29	97.05.29	97.05.29	97.05.29	97.05.29	97.05.29	97.05.29	97.05.29	97.05.29
Original % Subsampled	100	50	100	25	25	25	25	25	25	25	25	25
Dreissena polymorpha	3	136	18	4	8		412	236	372	184	260	320
SPHAERIIDAE:												
Pisidium			3			12						
Sphaerium simile												
Sphaerium striatinum												
UNIONIDAE:												
Lampsilis radiata												
MOLLUSCA:GASTROPODA:												
ANCYLIDAE:												
Ferrissia												
HYDROBIIDAE												
Amnicola limosa		2		24	8	24	12	4	4	8	28	28
Cincinnatia cincinnatiensis												
Probythinia lacustris												
PHYSIDAE:												
Physella gyrina							8	4	44			4
PLANORBIDAE:												
Gyraulus circumstriatus						4		4	24			4
Helisoma anceps												
Promenetus exacuous									8			12
VALVATIDAE:												
Valvata tricarinata			1		4	16	16	28	44	4		4
VIVIPARIDAE:												
Viviparus georgianus				4		4	56	16	88			
NEMATODA:	1		10	4								4
PLATYHELMINTHES:												
Dugesia tigrina								4			4	
Hydrolimax griseus	1		1							4	4	4
Total Number of Taxa	10	13	19	20	19	19	16	16	25	21	26	28
Total Number of Specimens	37	194	135	580	400	556	756	500	1104	532	884	1060

Table L-1. Total numbers (#/0.025m²) of benthic invertebrates from 21 stations in Lake Couchiching

Station	21	21	21
Replicate	1	2	3
Date	97.06.02	97.06.02	97.06.02
Original % Subsampled	25	25	50
TAXA LIST			
ANNELIDA:HIRUDINEA			
ERPOBDELLIDAE:(juveniles)			
Mooreobdella fervida			
Nephelopsis obscura			
GLOSSIPHONIIDAE:			
Alboglossiphonia heteroclita			
Desserobdella phalera			
Glossiphonia complanata			
Helobdella elongata			
Helobdella fusca			
Helobdella triserialis			
ANNELIDA:OLIGOCHAETA			
ENCHYTRAEIDAE:			
NAIDIDAE:			
Nais communis			
Ophidonais serpentina			
SPARGANOPHILIDAE:			
Sparganophilus eiseni		4	2
TUBIFICIDAE:			
Immatures with hairs		4	
Immatures without hairs		4	
Aulodrilus pigueti			
Aulodrilus pluriseta			
Ilyodrilus templetoni			
Limnodrilus clarapedianus			
Limnodrilus hoffmeisteri			
Potamothrix bavaricus		16	
ANNELIDA:POLYCHAETA			
Manayunkia speciosa			
ACARINA:			

Table L-1. Total numbers (#/0.025m^2) of benthic invertebrates from 21 stations in Lake Couchiching

Station	21	21	21
Replicate	1	2	3
Date	97.06.02	97.06.02	97.06.02
Original % Subsampled	25	25	50
Albia			2
Arrenurus			
Hygrobates		4	
Konikea			
Lebertia			
Limnesia			
Unionicola			
CRUSTACEA			
AMPHIPODA:			
GAMMARIDAE:			
Gammarus fasciatus			
Gammarus pseudolimnaeus			
HYALELLIDAE:			
Hyalella azteca	108	64	26
CLADOCERA:			
CHYDORIDAE:			
Eurycercus			
DECAPODA:			
CAMBARIDAE:			
Orconectes virilis	4		
ISOPODA:			
ASELLIDAE:			
Caecidotea intermedius			
Caecidotea racovitzai			
Lirceus lineatus			
INSECTA:			
COLEOPTERA:			
ELMIDAE:			
Stenelmis			
DIPTERA:			
CERATOPOGONIDAE:	4	8	2
CHAOBORIDAE:			

Table L-1. Total numbers (#/0.025m^2) of benthic invertebrates from 21 stations in Lake Couchiching

Station	21	21	21
Replicate	1	2	3
Date	97.06.02	97.06.02	97.06.02
Original % Subsampled	25	25	50
Chaoborus punctipennis			
CHIRONOMIDAE:			
CHIRONOMINAE:			
Chironomus	28	4	2
Cladotanytarsus	4	4	
Cryptochironomus			
Dicrotendipes	64	28	18
Microtendipes			
Parachironomus			
Paracladopelma			2
Paratanytarsus	4	4	2
Paratendipes	24	12	16
Phaenopsectra flavipes			
Polypedilum		4	
Pseudochironomus		4	
Stempellina		4	4
Tanytarsus	36	28	4
Tribelos jucundum			
Zavreleilla			
ORTHOCLADIINAE:			
Cricotopus	4		
Epoicocladius			2
Psectrocladius	4	8	2
Thienemanniella			
TANYPODINAE:			
Ablabesmyia	8	16	12
Clinotanypus pinguis	4	4	
Procladius	24	20	28
EMPIDIDAE:			
Hemerodromia			
EPHEMEROPTERA:			
BAETIDAE:			

Table L-1. Total numbers (#/0.025m^2) of benthic invertebrates from 21 stations in Lake Couchiching

Station	21	21	21
Replicate	1	2	3
Date	97.06.02	97.06.02	97.06.02
Original % Subsampled	25	25	50
Callibaetis			
CAENIDAE:			
Caenis punctata	68	52	34
EPHEMERELLIDAE:			
Eurylophella			4
EPHEMERIDAE:			
Hexagenia limbata	4		24
LEPTOPHLEBIIDAE:			
Leptophlebia			
MEGALOPTERA:			
SIALIDAE:			
Sialis			2
ODONATA:			
COENAGRIONIDAE:			
Enallagma sp.			
Enallagma civile			
Enallagma hagem			
CORDULIIDAE:			
Tetragoneuria cynosura			
TRICHOPTERA:			
HYDROPTILIDAE:			
Orthotrichia			
LEPTOCERIDAE:			
Ceraclea		4	
Mystacides sepulchralis			
Nectopsyche albida	4	4	
Oecetis inconspicua-group	8	4	
Triaenodes			
POLYCENTROPODIDAE			
Polycentropus	4		
MOLLUSCA:BIVALVIA:			
DREISSENIDAE:			

Table L-1. Total numbers (#/0.025m^2) of benthic invertebrates from 21 stations in Lake Couchiching

Station	21	21	21
Replicate	1	2	3
Date	97.06.02	97.06.02	97.06.02
Original % Subsampled	25	25	50
Dreissena polymorpha	344	284	118
SPHAERIIDAE:			
Pisidium			2
Sphaerium simile			
Sphaerium striatinum		4	
UNIONIDAE:			
Lampsilis radiata			
MOLLUSCA:GASTROPODA:			
ANCYLIDAE:			
Ferrissia			
HYDROBIIDAE			
Amnicola limosa	40	28	4
Cincinnatia cincinnatiensis			
Probythinia lacustris			
PHYSIDAE:			
Physella gyrina	4		
PLANORBIDAE:			
Gyraulus circumstriatus			
Helisoma anceps			
Promenetus exacuous	8		
VALVATIDAE:			
Valvata tricarinata			
VIVIPARIDAE:			
Viviparus georgianus			
NEMATODA:			
PLATYHELMINTHES:			
Dugesia tigrina			
Hydrolimax griseus			
Total Number of Taxa	23	27	22
Total Number of Specimens	804	624	312